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Preface

Om Asato Maa Sad-Gamaya,
Tamaso Maa Jyotir-Gamaya,
Mrtyor-Maa Amrtam Gamaya.
(*Brhihadaranyaka Upanisad, I.iii.28*).

"Lead me from Delusion to Truth, from Ignorance to Knowledge, from Death to Immortality," such is one of the wise words held highly by Balinese and believed in by all scholars who fathom how important research and knowledge are for the improvement of humanity. With this spirit, Ganesha University of Education as the leading university of education in Bali, organized the 2nd International Conference on Innovative Research Across Discipline (ICIRAD) on August 26, 2017. Moving away from the general coverage of the its preceding conference, the 2nd ICIRAD was focused on Education and how innovation in social sciences, second language acquisition, literature, art, technology, counseling, and sport are incorporated in education and teachers' training as a response toward globalization.

Famous for its sunrise beach, Grand Inna Bali Beach was chosen as the venue to host more than 100 presenters from five different countries, namely Indonesia, Thailand, Japan, Australia, and France. The committee received 67 submissions of full papers and accepted 53 articles to be included in this proceeding. All submissions underwent double blind peer reviews, under which each paper was reviewed by at least 2 different reviewers. The pinnacle of the 2nd ICIRAD was the presence of the Ministry of Research, Technology and Higher Education of Republic of Indonesia, Prof. H. Muhammad Nasir, Ph.D. and the President of Université de la Rochelle, France, Prof. Jean-Marc Ogier as the keynote speakers. The conference was adorned by 3 panelists from 3 different countries: Dr. Pariwate Varnakovida from King Mongkut's University of Technology Thonburi, Thailand; Dr.rer.nat. I Wayan Karyasa, M.Sc. from Ganesha University of Education, Indonesia; and Dr. Phillipe Grange, from Université de la Rochelle, France.

The conference directed its attention toward the inclusion of state of the art technology and educational innovation into curriculum in schools and higher education. This is one of the core roles of university with the greatest ripple effect, in which the innovation does not stop within the ivory tower of the university but it reaches out to the students, becomes the direct target of these innovations. It was another baby step taken by The Centre for Research and Community Service of Ganesha University of Education that is hoped to keep improving with the contributions from experts and scholars across disciplines and across the world so we all can take part in the development of humanity through knowledge.

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Advances in Social Science, Education and Humanities Research, volume 134

2nd International Conference on Innovative Research Across Disciplines (ICIRAD 2017)

Using Backup and Restore Automation from Disaster in University Information Systems

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***Abstract*— For information system users in university, especially for those who work daily and frequently which deals with storing data in the computer, the computer should be aware of sudden "disaster", such as virus, due to system failure. When "disaster" happens, it can hide or even lose the data or files in the computer. Backup is needed to prevent the loss of data when the computer is attacked by "disaster". It is highly recommended for organizations even individuals to do data backups on a regular basis. It is important in order to avoid the loss of important data when the disaster hits. While restore is to bring back the system to a certain point before. This paper proposes an application to automate the process of backup and restore called "SIPINTAR" which ensures that the data is stored properly and safely. The results are useful for helping individuals and organizations to protect their computers from system failure or other "disaster".**

Keywords*— *Information Systems; Back up; Restore; Disaster.

I. INTRODUCTION

Institutions such as universities from different types (small, medium and large) consider information as one of the most important assets that need to be secured against expanding number of dangers [1]. Online learning method (e-learning) is a method which enables the teacher to conduct learning activities wherever and whenever. It has many functions and purposes so that the teacher can get a lot of information to be used in teaching and learning process. Data is important, therefore data storage and its protection is a serious issue which should be considered [2]. In conducting e-learning, the teacher also can do operations such as grading, making schedules, announcements about certain rules or about classes, students and teacher data, etc. Most institutions now have more prominent attention to different sorts of business intrusions [3], [4] and they move forward to get ready for congruity of organizations, ensuring businesses are resilient and deploying a fast recovery after an emergency [3], [5].

Data and information on value, scheduling and teaching and learning process is very important, it needs a reliable backup application. Their ultimate objectives are to satisfy stakeholders' needs in addition to keeping in business for as long as they can [3]. Information can be imitated naturally and accurately to numerous areas. Numerous replication calculations duplicate information esteems from the source information thing to its reproductions [6]. Data backup is a necessary requirement for every organization [1]. The first step in understanding disaster recovery is to define and measure it [7].

II. THEORY

A. Backup and Restore

A disaster recovery plan is similar to an insurance policy that provides comprehensive protection from natural disasters, such as earthquakes, surges, sea tempests, and tornadoes. Disaster recovery plans over the years that are typically used by organizations that have computers and data for daily business operations. Recovery planning process is expensive, an alternative is to backup data from your computer and store it in an alternative location [8]. A disaster is anything that can cause a disruption in the normal operation of a business [9], [10]. Nowadays, more people use computers to store important documents, and a variety of other small information that may need to be maintained for a long time. Doing backup data computers is important to keep the document in the long term as well as short term.

B. Information Systems E-Learning

E-learning can be defined as a learning process created by interaction with digitally delivered content, network-based services and tutoring support E-learning is any technologically mediated learning using computers whether from a distance or in face to face classroom setting, it is a shift from traditional education or training to ICT-based personalized, flexible, individual, self-organized, collaborative learning based on a community of learners, teachers, facilitators, experts [11]. The software was designed and coded to operate within a unique environment of databases, operating systems and hardware. Most of the hardware used proprietary applications programming interface to interface with the learning system [12]. Information System (I.S) is basically concerned with data processing into some information. IS works in every system, which provides information for the managerial activities in university. A framework to change over information from inside and outside sources into data and impart that data in an proper shape, to chiefs at all levels in all capacities to empower them to settle on convenient and compelling choices for arranging, coordinating and controlling

the exercises for which they are capable. Others, however, give it more limited scope. They see it as a IS e-learning collecting and analyzing data and producing reports. Its purpose is to help managers to solve structured problems [13], [14].

C. Disaster

The term disaster or catastrophe owes its starting point to the French word "Desastre" which is a mix of two words "des" meaning terrible and "aster" which means star. In this way the term alludes to 'Awful or Evil star'. The disaster is an event of natural or manmade causes that leads to sudden disruption of normalcy within society, causing injury to life and property, to such an degree that typical social and financial instruments accessible are deficient to reestablish commonality. Debacle is a cataclysmic interruption of life in a general public caused by nature or a man made circumstance [15].

III. Method Research

This research consist of two stages following with 8 steps, there are: (1) Preliminary study I, (a) Observations, (b) Literature review, (c) Identification of requirement, (d) Design Information system of backup and restore with SDLC Water fall and (2) Preliminary study II, (d) Observation of real system (e) Testing information system backup and restore for disaster using any conditions (f) Analysis, (g) Conclusions and recommendations. The flowchart of the research is illustrated schematically in Figure. 1.

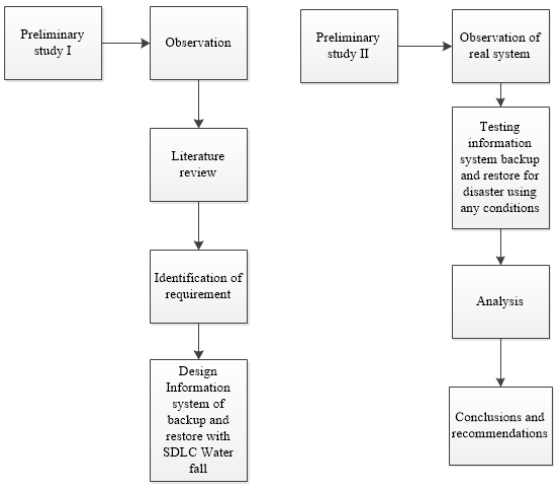

Fig.1. Flowchart of Research

Figure 2 shows SDLC of the waterfall life cycle model (adapted from Balaji and Murugaiyan 2012). The waterfall show was presented by Royce in (1970), particularly with regards to rocket mission programming plan, what's more, is a standout amongst the most well known strategies, and is one of the most popular methods of assessing the evolution of a product or system. Essentially, it is a step-by-step sequential description of the product's life cycle that spans 7 different stages, originally denominated "system requirements, software requirements, analysis, program design, coding, testing and operations". The first premise in which this model is based is that any development process of any software or system starts off by two essential steps: analysis and coding. This is the simplest conceptualization of the model, but is ineffective to understand the product's further development beyond the stage of creation. Therefore, the analysis stage is broken down into two steps—analysis of both system and software requirements, while the coding stage is preceded by program design [16].

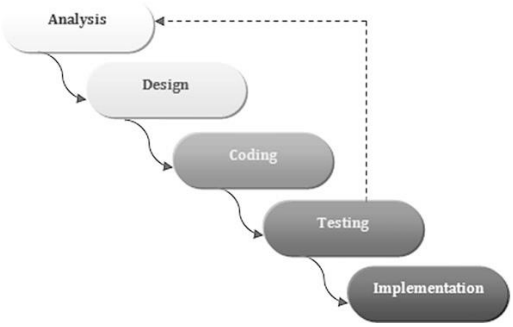

Fig.2. SDLC of the waterfall life cycle model adapted from Balaji and Murugaiyan 2012 [17].

Software engineering research is intended to help improve the practice of software development, so research planning should make provisions for the transition. Software engineering research includes, but is not limited to, experimental research. [13], [18].

IV. Result And Analysis

Educational institutions depend upon on-demand data systems, from student records, schedules of subject, announcements to professional research and content, to administrative applications and much more. Most conventional backup methods are outdated and limited in its scope of data protection, as it does not meet the requirements of educational that may have offices in multiple departments and campuses with vital information. Disaster recovery for these institutions implies protection of localized data pertaining to records, exams, and etc.

The development of a IS requires several phases, which have a relation on the activities. The activities include analysis, design, coding & testing, implementation and maintenance that sometimes referred to as phases. On the phase have elements that provide the framework for manage the project. Waterfall approach was SDLC first model to be utilized broadly in Software Engineering to guarantee achievement of the venture. In "The Waterfall" approach, the whole process of software development is divided into separate phases. Waterfall SDLC demonstrate is a successive programming improvement process in which advance is viewed as streaming progressively downwards (like a waterfall) through a rundown of stages that must be executed keeping in mind the end goal to effectively construct a PC programming. Initially, the Waterfall demonstrate was proposed by Winston W. Royce in 1970 to describe a possible software engineering practice [19], [20].

Software requirements are establishes the expectations for software functionality and identifies which system requirements the software affects. Requirements

analysis includes determining interaction needed with other applications and databases, performance requirements, user interface requirements, and so on [21]. Requirement of information systems is user both individuals and organizations protected by a system failure or other disaster, which is expected to reduce the cost in the event of damage to files or data on the client computer and can also duplicate data into separate media. Data from such duplication will be used to restore the data in case of damage or loss of data. In analyzing the proposed system for this application is the user can perform backup and restore automatically, at which time the backup files and folders can be setup in the coveted drive. Utilize case is speaks to a noteworthy bit of framework usefulness and on-screen character is a man or framework that gets advantage from and is outer to the subject [22], [23]. Actor in this case is user both individual and institutions, use case are backup, configuration and restore, which user can backup and restore, with configuration whenever, wherever drive of PCs.

Analysis phases are phase to understand and to keep in all the detail of business needs and the processing requirements of the new system. Instruments and procedure for investigation is UML. The Unified Modeling Language (UML) is generally accepted as the de facto standard modeling notation for the analysis and design of the object that oriented on software frameworks [13], [24]. UML is an institutionalized broadly useful displaying dialect in the field of software engineering and programming building. The standard is managed and was created by the object management group [19], [25].

In this case we only show use case diagram. Use cases help us to understand and clarify the user's requirement for interactions with the system and reveal it most or all the functional requirements of the new system. [19], [26].

Architectural design are determines the software framework of a system to meet the specific requirements. This outline characterizes the real segments and the connection of those segments, yet it doesn't characterize the structure of every part. The outer interfaces and apparatuses utilized as a part of the venture can be dictated by the creator. Point by point outline are looks at the product segments characterized in the structural plan stage and creates a determination for how each part is executed [21]. Detailed Design included are designer data location source (folder name, set copy and description), temp data (file name, folder type, level), temp delete (file name, folder type, level), and data location destination (destination). Type Data are character and numeric, with length 1 until 200.

Coding is implements the detailed design specification [21]. Coding phases are receiving the design of the system documents, the work done is divided in to modules/units and actual coding is started. Since, in this stage the code is created so it is the fundamental concentration for the designer. This is the longest period of the programming advancement life cycle. For this situation, programming dialect with Microsoft Visual Fox Pro. Visual FoxPro began as an individual from the class of dialects normally alluded to as "xBase" dialects, which have linguistic structure in view of the dBase programming dialect.

Stages Testing: After the code is produced it is tried against the necessities to ensure that the item is really settled the necessities tended to and accumulated it amid the prerequisites stage. During this phase all types of functional testing like unit testing, integration testing, system testing, acceptance testing are done as well as non-functional testing are also done. Testing are determines whether the software meets the specified requirements and finds any errors present in the code [21]. Any software development process is divided into several logical stages that allow a software development company to organize its work efficiently in order to build a software product of the required functionality within a specific time frame and budget. All software projects go through the phases of requirements gathering, business analysis, system design, implementation, and quality assurance testing [27], [28]. In black-box, or functional testing, test conditions are developed on the basis of the program or system's functionality; that is, the tester requires information about the input data and observed output, but does not know how the program or system works. The tester focuses on testing the program's functionality against the specification. With discovery testing, the analyzer sees the program as a black box and is totally unconcerned with the inner structure of the program or framework [29].

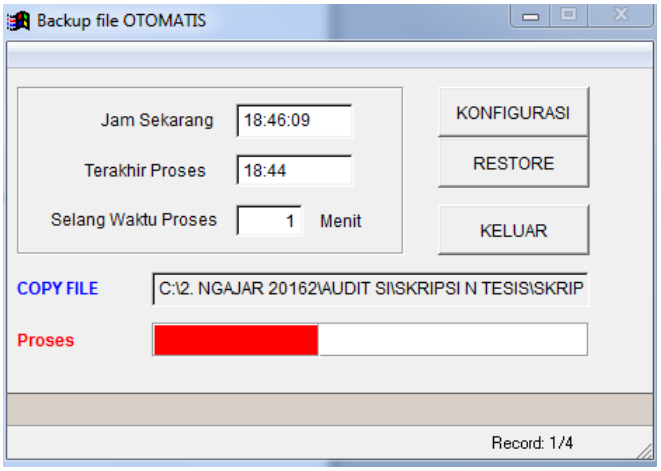

Fig.3. Backup Folder Processes

In figure 3 displays is where the backup progress shown in red running. Automatically incremental backup process will take place every minute.

Fig.4. Restore Processes

In figure 4 displays is where the restore progress running. When will do restore then input date, month and year in text of application.

Execution stages are the stage that furnishes clients with the documentation and preparing necessity to utilize the framework viably. Information Conversion will just happen once, yet client documentation will be required. Sending of the item will be done, on the equipment that will be utilized as a part of generation (on live frameworks). Sending itself requires cautious arranging. Once the product is deployed, initial data will be populated, user training will happen. Stages support the framework data when the clients begins utilizing the created framework then the real issues comes up and should be fathomed every now and then. This procedure taken for the created item is known as support.

Universities rely on demand-based data systems as the lifeblood of e-learning operations, from student and faculty records to values and schedules to administrative applications and more. Loss of data can be expensive for educational institutions, such as loss of laptop or desktop data for staff and faculty or database servers containing records, exams. In general, while the term "disaster" typically generates an image of data and information loss from the network as a whole, in fact it is a loss of local data that is not only catastrophic but easily preventable.

V. CONCLUSIONS

The implementation of university information system backup and restore are successful automation to recover data damage or loss in the event of a disaster and recover a small portion of data that suffered damage or loss as a result of human error. Automation do not have a choice to the user backup time and backup data can only be done every 1 to 999 minute so that the same data you want to back up every minute, it puts a burden on the client computer hard drives in terms of memory usage.

Features of “SIPINTAR”, includes Real-time backup that saves changes to your files every 1 minutes. It works for computers located on and off-university can access is very useful for computers that move around a lot like notebooks and tablets. Can select what files and folders want to backup on university computer. Can make changes to what is back up at any time through an easy to use program that runs on your computer.

The backup system will keep copies of old versions of files it has backed up. So can made a change to a file and wanted to revert to the version of the file as it was the previous week for example. Can restore files at any time without the assistance of technical support staff. Restoring files is accomplished through an easy to use point-and-click interface provided by SIPINTAR program installed on university computer.

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Design of Values Education in School For Adolescents

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***Abstract*—The growth and development of values in the students themselves need to be planned, deliberate, and facilitated through education. The ongoing values education tends to ignore the uniqueness of each student. Evidently, the 18 character values developed by the Ministry of Education and Culture are top-down, thus ignoring the personal side of the students. This article attempts to answer the question of what design of values education is appropriate for students entering adolescence. This research is a literature review through library research. Data were analyzed using content analysis. Based on the study of literature, this research reveals that each student has dominant values that are specific and unique so that in its development requires an individual approach. There are two important concepts in developing values for students who are entering the adolescence phase, they are; First, the values is seen, not taught. This concept entails every adult who interact with students should be role-models for the growth of values. Second, values based on environmental education. Like plant seeds which are well developed when they get a good soil, the students' values will grow well when they have the support of values based on environmental education.**

Keywords—value, adolescent, role model, and value-based environment.

I. INTRODUCTION

Values education is often known by different names; such as moral education, character education, and ethics education [1], Values education' is commonly understood as placing a particular emphasis on civic and moral values [12]. Values education is therefore very closely aligned to other terms currently used in the literature, including spiritual, moral, social and cultural development. Reference [2] and reference [2] refer to character education, education in virtues and the development of attitudes and personal qualities. The values education literature from the United Kingdom mostly refers to "values education, character education, moral education, personal and social education, and citizenship education" [2].

The issue of values education has become a major part of the educational policy agenda of many nations around the world [3][4][5][6][7] . Ref.[8] believed that a common thread exists among the different forms of values education.

Value education according to Winecoff H.L. & Bufford, C. [9] is: Values education-pertains to questions of both moral and non-moral judgment toward object; includes both aesthetics (ascribing value 10 objects of beauty and personal taste) and ethics (ascribing values of right and wrong in the interpersonal realm). Winecoff reveals that the goal of values education is as follows: "Purpose of Values Education is process of helping students to explore exiting values through critical examination in order that they might improve the quality of their thinking and feeling".

In recent years, values education has become mainstreaming in the development of the formal curriculum in Indonesia. Curriculum 2006 (School-Based Curriculum) and Curriculum 2013 put the values aspect (character) as the main objective of learning activities in the classroom. However, the ongoing value education tends to ignore the uniqueness of each student. Evidently, the 18 character values promoted by the Ministry of Education and Culture are top-down, thus ignoring the personal side of each student. The neglect of the students' personal aspects will cause the values that have been grown tend to be enforced, whereas everyone has different dominant values.

This article attempts to answer the question of what design of values education is appropriate for students entering adolescence. As it is understood that adolescence are a developmental phase that has unique characters. Also the aspect of personal disposition requires that values education approach that is applied to them is also specific and flexible.

II. NEEDS FOR VALUES OF ADOLESCENCE

Values are 'socially shared ideas about what is good, desirable or important' [10] . Values refer to ideas held by individuals or groups concerning standards defining that is 'good or bad', what is desirable and what is not desirable [11] . In short, values can be defined as "principles and fundamental convictions which act as general guides to behaviour, the standards by which particular actions are judged to be good or desirable."[12].

The students of Junior High is stated to be entering the stage of adolescence development which has different character compared to the other stage of development. There are 10 characters of adolescence development, they are: 1. Achieving new and more mature relations with peers. 2. Bring in social roles as men or women. 3. Make use of his own body according to circumstances and utilize it effectively. 4. Have achieved emotional independence. 5. Achieving guarantees for economic independence. 6. Choosing and preparing for a particular job 7. Preparing for marriage and family life. 8. Developing intellectual skills and concepts needed as citizen competency. 9. Developing ability and willingness to act

socially positive behavior (responsible). 10. Establishing a set of values and an ethical system as a guide to behavior [13] .

Egan [14] explains that the development of children's interest and concern for values takes place in four stages: myth, romantic, philosophical, and ironic. The four stages of development goes along with the physical growth of children who become older. The stages, in detail, can be seen in the following explaination.

Stage of myth (5-10 years)

Children learn through how to play and tell stories. They are happy to play with objects, in this case toys, that involve their feelings. At this stage moral values are the main concerns that are distinguished in black and white like good and ugly, dear and hateful, likes and dislikes.

Romantic Stage (8-15 years)

In this range of age, children expect a lot of information that can provide a description of human, the spirit of life, adventure, technological developments, sports, until the problems that are foreign to them.

Philosophical Stage (14-20 years)

This stage is dominated by adolescent desire to simplify the sequence of experiences through a conclusion made by themselves or through a standard law-order. At this stage, children usually feel frustrated when there are special treatments or a conflict in law enforcement.

The ironic stage (20 years and over)

At this stage, late adolescents or adults try to find clearer conclusions based on the knowledge and experiences that they have. But drawing conclusions and explanations, including the things that are contradictory and confusing are not only appreciated but please them. At this stage late adolescents or adults are no longer frustrated by the presence of something offhanded, conflicting or contradictory.

III. Values Education in the Schools Today

Values education, or often referred to the other terms such as; character education, ethics education, moral education, etc., has always been a core in the development of curriculum enacted in schools. The 2006 curriculum known as School-Based Curriculum makes the character as an important aspect of measurement of learning outcomes. There are 18 character values [15] developed in school learning, which include; honesty, responsibility, healthy lifestyle, discipline, self-confidence, hard-working, entrepreneurial spirit, logical thinking, criticality, creativity, innovation, independence, curiosity, loving sciences, consciousness of the rights and obligations of self and others, obedience of the social rules, respect of the work and achievements of others, politeness, democracy, nationalist, and appreciating the diversity.

Moreover, the 2013 curriculum is placing attitudes as the ultimate goal of learning, manifested in the form of core competencies. The spiritual and social attitudes should be used as reference in the implementation of learning. Whatever the subject, the learning process in the classroom should contribute to the achievement of spiritual and social attitudes. Learning mathematics, Indonesian, social sciences, sciences and other subjects should be able to lead the students to realize God's majesty (spiritual attitude), to make the students become honest, tolerant, wise, polite, and all other good attitudes (social attitudes).

Implementation of values education in the curriculum of 2013 is done through three strategies, namely; First, integrated in all subjects; Second, through the development of school culture; and third, through extracurricular activities. The first strategy is ensuring that all subjects in school should contribute to the development of the students' good values. The second strategy requires the culture that develops in school must be a positive culture so that it can be the cause of the growth of good values. The third strategy requires that all extracurricular activities in schools also support the growth of students' morals. Not just skill and knowledge, but extracurricular activities are also required to improve attitudes.

The concept of values education offered in the formal curriculum, both School-Based Curriculum (2006 Curriculum) and 2013 curriculum, is an ideal concept. The ideas developed are expected to improve the values/characters of the young generation in this nation. But looking at the practice that has been running in recent years, the ideal concept has not implemented properly.

IV. Discussion

A. Values is Seen, Not Taught

The important question to point out is which part is wrong in the values education in Indonesia? Is it a wrong concept or wrong implementation? Conceptually, the values education developed in the formal curriculum tends to debate on what values education is. There are substantial differences between values education and values-based education. The first concept tends to focus on discussions and debates about what values are and how to teach values. The second concept illustrates that all processes and parties involved in children's education should be values-based. Students are directly conditioned to experience values-based atmosphere and events. For example, students may have not fully understood the definition of tolerance, but the teaching-learning process in the classroom lives an atmosphere of tolerance. The children have not fully understood the definition and concepts of peace, but the school culture familiarizes the value of peace. Direct experience is what ultimately shapes the children's identity so that their behaviour will always base on the values they believe.

The concept of values-based education is important to remember that in fact every child born into this world already has the capital value of goodness in them. The child just needs a real example. Therefore, anyone who interacts with students in school should reflect as role-models for values-based actions.

B. Values-Based on Environmental Education

Like plant seeds, a good seed will grow well when planted in a fertile soil, enough nutritional intake, and water. Good seeds will not grow well when the soil has not enough food and water needed. It is similar to the seeds of values owned by every child. The seeds of good values must be supported by a values-based environment.

Children's values will develop when supported by ethos, culture, and positive school climate. Schools that have culture of mutual respect, tolerance, cooperation, and care will make the seeds of student's values to thrive. Conversely, school culture which is full of threats, intimidation, and fear will cause the children's potential to be undeveloped. Reference [16] describes a value-based environment as in figure 1.

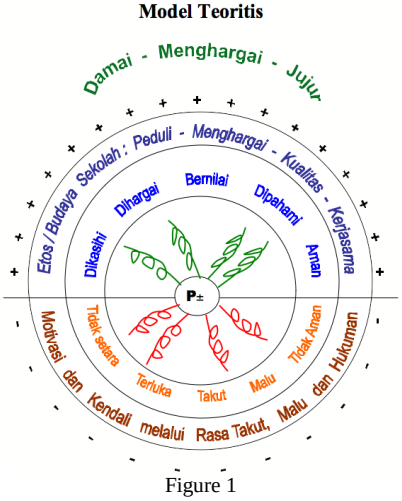

Figure 1

Figure 1 explains that the symbol P represents a child born in a condition of potential goodness. The potential of good will grow when the environment supports it by care, appreciation, quality, and cooperation. While the environment that does not cause a sense of security will cause the potential to undeveloped.

Reference [17] reveals that, there are three basic assumptions that need to be considered in the education of values namely;

> "First, universal values teach respect and honor to every human being. Learning to enjoy those values will strengthen the well-being of individuals and communities. Second, every student is really concerned about values and able to create and learn positively when given a chance. Third, students are struggling in an atmosphere of values in a positive, safe, respectful, and compassionate environment where students are supposed to be able to learn to make environmentally conscious choices. "

Creating a values-based atmosphere can help students learn and practice values. Educators are required to reflect on their values. Teachers must have the awareness and skills to provide support, recognition, active listening, positive encouragement, conflict resolution, and collaboration.

To internalize student inner values, it is not enough by simply listening to the teacher's lecture on values, but rather they must experience and make those values a part of themselves. In fact, students do not just feel, experience, and think about values, but they must have the social skills to apply the values to daily life. Later, they do not only bring values to their personal lives, but also to the wider society.

V. CONCLUSION

Based on the description of the previous sections, there are two conclusions in this paper. First, values development requires an approach that enables children to experience value events directly. This experience can be gained through an example of the behaviour shown by adults around the children. The incidence of delinquency and irregular acts perpetrated by adolescents is due to the fact that they do not have moral guidance in building their identity. Second, values education also requires the support of values based on environmental education. Either the physical or non-physical environment of the school should reflect the values. Both concepts can be built through the paradigm of value-based education, not values education. This concept can be combined to strategies that the formal curriculum has developed in schools.

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The Impacts of *Tri Hita Karana* - Based Educational Tourism

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***Abstract*—This study was aimed at analyzing and describing the impacts of *Tri Hita Karana*-Based Educational Tourism on the quality of the community life. This descriptive qualitative research was done to the communities of Mengesta Village. The subjects consisted of 60 community members involved as the learning resource persons in developing the educational tourism. The data which were collected consisted of the impact of the development of educational tourism on the improvement of the community life quality. The data were collected by using questionnaire and field observation. The data was analyzed descriptively and qualitatively. The result showed that the average of the respondents' responses related to the impact of the development of the educational tourism on the social community life was 88%, falling into "positive" minimal qualification. There was an increase in the local economy with the average of 55%.**

Keywords—educational tourism, Tri Hita Karana, quality of community life

I. INTRODUCTION

Tourism business is a motivating sector for the national economy, especially in Bali. The growth of businesses in tourism sector has an impact on the development of other business sectors, which include hotel, traveling, souvenir, and transportation. Tourism in principle has three main pillars, that are, government, private organizations, and the community. The community is one of the main pillars in developing tourism, because whatever policy made by the government and whatever support given by the private organizations as the providers of facilities if they are not supported by the community in the environment tourism will not develop optimally [1] [2]. However, to develop a community's awareness of the importance of tourism is not easy. According to [3] [4] there are some types of tourism development, which include (a) the whole with a new goal, for example, to build attractions in the site which was formerly not used for attraction; and (b) to create new activities or stages of an activity that is going to be relocated to another, in which the activity needs modifications in building and structure.

Along with the increasingly more rapid development of tourism in Bali, social problems start to surface. One of them is the decrease in the agricultural land which causes the decrease in the farmers' income. Land conversion cannot be stopped along with the development of the tourism sector. The nature which was formerly a tourist attraction, such as rice field terraces, mounts, beaches, now starts to have new functions as villa, hotel, restaurant, and residential areas [5]. Other problem which recently started to be felt is local wisdoms which the community hold high start to fade away [1]. This problem also occurs in the agricultural region / the *subak* of Mengesta Village, Tabanan regency, which belongs to World Cultural Heritage (WCH) of Jatiluwih.

Mengesta is a village that belongs to WCH of Jatiluwih. This area is an agricultural area with beautiful rice terraces, with the background of a line of mountains in the north, and a sea view in the south. In this area, Balinese traditional art has developed, and the people's houses have Balinese architecture. It is the tradition in the community that the practice of the community life is according to the Hindu tradition of most of its population. In this area there are Agricultural Training Center and Self-Supporting Village (P4S) "Somya Pertiwi" with farmer groups who use an organic farming system. Based on the characteristics of Mengesta Village as described above, through this study an educational tourism was developed.

Educational tourism is a program which combines the elements of tourism activities with educational content in them. This program is very suitable for those who want to travel to tourist objects while learning something there. With such characteristics, this program is very suitable with schools that develop and educate the students. In addition to the learning program in class, an

educational tourism program is proven to be effective in increasing teaching patterns and socialization among the students [6] [7]. The tour activity in the educational tourism tour will have a broader impact on the economic development in the area since tourist centers that are developed involve the community directly. The community participation can be done in two ways, which are the participation in decision making and in sharing the benefits of the tourism [8].

Educational tourism being developed in Bali especially needs to take into account local genius elements that are practiced by the people in the society. One of the elements is the development of tourism based on *Tri Hita Karana* (THK) concept. The THK concept is one of guidelines in the Balinese life from generation to the next generation and can be used as featured in ensuring the community's commitment for developing the tourism education business [9] [10]. THK has the meaning of maintaining the harmonious and peaceful relationships human has with God, other human fellows, and the environment in order to live a balanced life. In developing tourism based on THK some aspects are required to support it. The aspects are as follows (a) *parahyangan* aspect that consists of a space/ a region for holy places/for worship; (b) *pawongan* aspect consisting of space/region for humans and the community; and (c) *palemahan* aspect consisting of space`region for farming and conservative land such as ravines, steep river banks or mountains rivers, river flood plains, mounts/ hills and forests [1]. Therefore, the problem formulated in this research is how the impact of the development of Tri Hita Karana-based education tourism in WCH of Jatiluwih region?

II. METHODS

This study was a descriptive and qualitative research. The sample consisted of 60 community members involved as the learning resource persons in developing the educational tourism and community figures in Mengesta Village, Penebel, Tabanan. The sample was selected by purposive sampling technique, considering the learning resources and the number of sample members, that is, agricultural group with 15 members, and women farmer group with 15 members, art group with 15 members, and a group with other community members with 15 members.

The data collected in this study were the impacts of educational tourism development on the improvement of the quality of community life. The community life quality covered the improvement of the community social life and the improvement of the local economy. The community life quality measured consisted of perception of the community about the development of the educational tourism, the preservation of agricultural land, and the existence of tradition, custom and culture, the participation of the community in the implementation of the educational tourism , home stay, the impact on the community social life, the impact on the preservation of environment, education and training for the community, and the participation of private organizations in management. Increase in the local economy was measured by looking at the average of the increase in income of the community from the time before the and after the implementation of the educational tourism.

The data were collected by observation and questionnare. The questionnaire on perception of the community used Likert scale with the scales ranging from 1 to, consisting of 10 items in the form of statements. Score 1 stands for strongly disagree; score 2, disagree; score 3, cannot decide; score 4, agree; score 5, strongly agree. The questionnaire on community income used a closed questionnaire type by giving options of income based on a range. The field observation used an observation guide, done by making an observation directly to the community.

Data analysis was done descriptively and by using qualitative analysis. The descriptive analysis was done by counting the mean score of the perception of the community obtained based on the questionnaire given. The categories of perception were converted as follows.

Difference per category =

$$\frac{Skor\ tertinggi - Skor\ terrendah}{banyak kategori} = \frac{5-1}{5} = 0.8$$

Thus, the following conversion guide is obtained as shown in table 1.

TABLE 1.GUIDE FOR CONVERTING THE COMMUNITY'S PERCEPTION [11]

Mean Score ($\overline{X}$)	Caegory
$4{,}2 \le \overline{X}$	Very positive
$3{,}4 \le \overline{X} < 4{,}2$	Positive
$2{,}6 \le \overline{X} < 3{,}4$	Moderate
$1{,}8 \le \overline{X} < 2{,}6$	Negative
$1{,}0 \le \overline{X} < 1{,}8$	Very negative

Improvement in the community's economy is calculated based on the number of people who enjoy an average income increase per month, as seen from the condition before and after the

implementation of the educational tourism in their area. Qualitative analysis was done through a series of activities, that is, data reduction, data display, data interpretation, and conclusion drawing. In the analysis of these data, the data were grouped into certain categories, concepts, proportion, or themes. After that, an interpretation was made, by giving a meaning and explaining the categories, patterns and by finding the relations in an effort to answer research questions.

III. RESULT AND DISCUSSION

From the result of questionnaires that were distributed to the respondents, the perception of the community toward the implementation of the educational tourism program based on *Tri Hita Karana* (THK) in Mengesta Village, the following result as shown in table 2 was found.

TABLE 2. PERCEPTION OF THE COMMUNITY TOWARD THE IMPLEMENTATION OF EDUCATIONALTOURISM.

Mean Score ($\overline{X}$)	Nummber of Respondents (persons)	Category
$4{,}2 \leq \overline{X}$	45	Very positive
$3{,}4 \leq \overline{X} < 4.2$	8	Positive
$2{,}6 \leq \overline{X} < 3.4$	7	Moderate
$1{,}8 \leq \overline{X} < 2.6$	0	Negative
$1{,}0 \leq \overline{X} < 1.8$	0	Very negative
Total:	**60**	

Based on table 2, it can be seen that the number of respondents who had the minimal positive perception was 53 (88%). There were 7 respondents who had an undecided perception and none had negative and very negative perceptions.

Improvement in the local economy/the people's incomes was found based on the questionnaire and is related to the income received before and after the implementation of the educational tourism based on THK. The recap of the result of questionnaire on the people's income is presented in table 3.

Based on table 3, it can be seen that after the implementation of the THK-based Educational tourism that has lasted for about 2 years, no respondent's income is below 1 million rupiahs per month. However, none has reached income above 4 million per month, except 1 respondent who, before the implementation of the educational tourism had an income above 1 million per month. The distribution of the increase from before to after the implementation can be explained as follows. 5 respondents were in Range No. 5 and got an increase of income to Range No. 4. 25 respondents were in Range No. 4 and got an increase to Range No..3. 3 respondents were in Range No. 3 and got an increase to Range No.2. Thus, 33 respondents (55%) got an increase of income from before to after the program implementation.

TABLE 3. RECAP OF THE AVERAGE OF INCOME OF THE COMMUNITY PER MONTH

No.	Income Range (X) In millions of Rupiahs)	Number (persons)	
		Before	After
1.	$4 \leq X$	1	1
2.	$3 \leq X < 4$	4	7
3.	$2 \leq X < 3$	5	28
4.	$1 \leq X < 2$	45	25
5.	$X < 1$	5	0
	Total:	**60**	**60**

Based on the result of the study i the quality of life of most of the people was in positive and very positive categories. On a close observation, in the implementation of the program of the educational tourism especially in Mengesta village, the people who lived in the area were really empowered optimally. This empowerment occurred starting from the centers of learning resources, as the owners of learning resources, as the owners of the infrastructures and facilities that supported the implementation of the educational tourism, as the guides in the tourism destination. This agrees with the result of study done by [12] who state that the implementation of tourism has to involve the participation of the people around the tourist destination maximally.

Attractions presented were done by using learning group system: the groups were art group, farmer group, and agricultural crop processing group (agricultural women group). Every group has got its clear and transparent business operational regulation, and the division of business income was based on the agreement among the group members with this way of implementation, each group member got even business income. The quality of social life among the group members was created well and was open. This is one element of the concept of *Tri Hita Karana* that is related to keeping a harmonious relationship among human beings [1].

Simultaneously with the implementation of the educational tourism program in this area, the awareness and quality of the people's understanding of the importance of keeping the cleanliness of the environment increased from time to time. The habit that started to develop was the habit of keeping the house environment clean, because of the tourist visit to their houses. In addition, there was a business of producing organic fertilizer by using waste from cattle and agricultural waste, so that it could reduce environmental pollution. The use of organic fertilizer agriculture could improve the quality of the worse

soil condition that was caused by the use of inorganic fertilizer in a long time [13]. There was an increase in the agricultural crops, especially rice, the best commodity of this area. Rice cultivation with organic system increased the rice quality produced and increased the sale price of rice in this area [13]. Since the application of organic agricultural system, birds (*kokokan*/herons) started to come, who had never appeared in this area. The presence of the birds, in addition to helping the farmers in exterminating insects, it also added the beauty of the natural panorama in this area. So, there were efforts to preserve the environment, which is the manifestation of the THK concept of keeping the harmonious relationship with the natural environment.

In the attraction of the tourist visit to the people's houses, the tourists were presented an attraction about the tradition of the people according to Hinduism. The tourists watched the way to make *canang sari* or offerings for the Hindu rituals which are performed everyday. The tourists could learn how to make *canang*/ offerings, and to learn how to cook traditional Balinese food. The people kept the cleanliness of the shrines (*merajan*) since the tourists usually saw all the buildings in the people's house environment. The religious traditions kept being preserved by performing religious rituals before and after rice harvest, as the manifestation of gratefulness to God who has blessed the crops in abundance. This shows the quality of the spiritual life which became better and better. This is the manifestation of the THK concept of keeping a harmonious relationship with God.

There was an increase in the local economy, that is, the average increase of the people's income (especially that increase of the learning resource persons' income) from before to after the implementation of the educational tourism program. This occurred because of the additional source of income that the people got as the impact of the tourist visit to the area, both domestic and foreign tourists. With the presence of tourist visit, the local people could sell their organic agricultural products of good quality such as red rice, black rice, and brown/yellow rice which have never/seldom been cultivated in other areas. In addition, the people in this area could also sell processed agricultural products such as special food from this area by presenting rice in various colors.

IV. CONCLUSION

The implementation of the Tri Hita Karana-based educational tourism in Mengesta village, which is located in the World Cultural Heritage area of Jatiluwih, has positive impacts on the quality of the community life in this area. The community life as seen from social community life is categorized in the "positive" minimal qualification and the improvement in the local economy as seen from the number of people (the learning resource person group) who have got an increase in their average income per month, that is, 55% of all the respondents. The more efforts made by the people are related to the *Tri Hita Karana* concept in the community life. This is seen from the efforts to preserve the environment, the harmonious relationship among human beings, and the religious life which becomes better. Beside the positive impacts, there are also negative impacts that are resulted from the implementation of the educational tourism that needs a further solution from various people. The negative impacts, among other things, are social jealousy from people who have not been able to enjoy the economic impact that is resulted and the presence of customary binding rules that often become an obstacle in the implementation of the tourism.

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The Impact of Problem Based Learning on Productive Skills and Attitude toward English Language Learning

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***Abstract*- This study aimed at analyzing the impact of Problem-based learning (PBL) on Students' productive skills and attitude toward English language learning (ELL). The study employed embedded mixed-method design which involved the collection of both quantitative and qualitative data. The data collection involved the use of pre-test, post-test, closed-ended questionnaire, open-ended questionnaire, observation checklist, and interview guide. Quantitatively, the data were analyzed by using Kolgomogorov-Smirnov formula to find the normality of the data and Paired Sample T-test to find the difference between students' productive skills and attitude before and after the treatment. Qualitatively, the data were analyzed by using Miles and Huberman data analysis which consists of data reduction, data display and conclusion drawing. The result of the study showed that there were significant impacts of PBL on students' productive skills and attitude toward ELL. This study also concluded that PBL gave positive impact on teaching and learning process.**

Keywords*: Problem-Based Learning, Productive Skill, Students' Attitude*

I. INTRODUCTION

Problem-based learning (PBL) is a constructivist educational approach which guided by teachers who act as cognitive coaches [1,2]. Students develop their critical thinking, problem solving and collaborative skills as they identify problems, formulate hypotheses, conduct data searches, perform experiments, formulate solutions and determine the best solutions to the problem provided. Problem-based learning enables students to embrace complexity, find relevance and joy in their learning, and enhance their capacity for creative and responsible real-world problem solving.

According to Hmelo-Silver [3] problem-based learning is an instructional method centered on the learner. Thus, the students are required to be actively participated on the learning activity in the classroom. By doing their own work, the students are expected to be independent. Besides that, the students are subconsciously trained to be more creative in their task because they are challenged to try their own innovation.

Coffin [4] points out that in a problem based learning classroom, students are provided with a topic which they should develop through research or problem solving for their individual or group learning and teachers should monitor the project performed by students. It means that even though the students work individually, the teacher still should monitor the students' activity. The teacher directs the students by giving them topic to do in the class, so then the activity to be done by the students remain the main direction of the learning indicator or syllabus. Similarly, Problem-Based Learning is simply defined as an instructional model that contextualizes learning by presenting learners with problem to solve and product to develop [5].

Abidin [6] found that students who were educated by using Problem-Based learning achieved the learning goal successfully. In line with that, a research done by Othman & Shah [7] also found a similar result that this particular learning model had a significant impact to the students' learning result. In addition, Torp and Sage [8] state that Problem-Based Learning also have several benefits for every subject matter such as: 1) Problem-Based Learning promotes self-motivation and self-responsibility to learn; 2) Problem-Based Learning facilitates more enjoyable and more effective learning; 3) Problem-Based Learning encourages learning from experience, allow the students to use and organize what have been learned to understand problems; 4) Problem-Based Learning integrates knowledge with practice; 5) Problem-Based Learning nurtures the ability to analyze problems and to identify and acquire knowledge and skills needed to deal with real-life-situations; 6) Problem-Based Learning develops teamwork and communication skills; 7) Problem-Based Learning train the students to be reflective and assess their own and others' work; 8) Problem-Based Learning cultivates independence, curiosity, and skills for self-directed, life-long learning.

Those studies reveal the significant effects of implementing Problem Based Learning Instruction on students' competence. The studies also show that PBL is an effective teaching model that can be used in the classroom. However, the research that particularly examine the impact of

Problem Based Instruction on students' productive skills not much found. Similarly, research that particularly focus on the impact of PBL on students' attitude about learning EFL was hardly found. Thus, it is important investigating the impact Problem Based Learning Instruction on students' attitude toward English Language Learning. From those backgrounds,, the aim of the study can be stated as follows: (1) analyzing the impact of Problem-Based Learning on students' English Productive skill (2) analyzing the impact of Problem-Based Learning on students' Attitude,

II. METHODS

This study applied embedded mixed method design by Creswell & Clark [9]. The population of this study was Grade 8 students of SMP N 1 Kuta Utara which consists of 12 class and 412 students. The sample of the study was Grade 8 D which consists of 36 students. The sample of the study was chosen randomly.

The research procedure involved (1) preliminary observation and interview, (2) try out of the instruments, (3) pre-test and questionnaire distribution, (4) treatment of Problem-Based Learning, (5) post-test and questionnaire distribution, and (6) data analysis.

The data collection involved the use of interview guide, observation checklist, productive skill pre-test and post-test, closed ended questionnaire, and open ended questionnaire. Interview guide was used to collect the data about teaching and learning practice applied by the teacher. There were two type of observation checklist used in this study. The first observation checklist contains the characteristic of Problem-Based Learning which was administered before the treatment given. It was used to observe if the class has applied Problem-Based Learning or not. The second checklist contains the step of Problem-Based Learning which was administered during the treatment. Pre-test and post-test were used to collect the data about students' productive skill. Close-ended and open-ended questionnaire were used to collect the data about students' attitude toward English Language Learning.

Quantitative data were analyzed by using Paired Sample T-test in order to find out the difference of students' attitude and students' productive skill. In order to apply Paired Sample T-test the data were required to be normally distributed thus normality test was also administered. Kolgomogorov-Smirnov formula by using SPSS 18.0 for windows was administered to find the normality of the data. Wilcoxson test was administered if the data were not normally distributed. The data which was analyzed quantitatively were speaking and writing pre-test and post-test and also closed ended questionnaire. Qualitative data was analyzed by using Miles and Huberman [10] data analysis which consist of data reduction, data display and conclusion drawing or verification. The data which analyzed qualitatively was open-ended questionnaire in order to find out students' attitude toward English Language Learning.

III. RESULT AND DISCUSSION

The Impact of PBL on Students' Productive skills

There were two skills examined in order to find the impact of Problem-Based Learning on students' productive skills, those are writing and speaking. Pre-test and post-test were administered in order to measure students' productive competence before and after the treatment of PBL. The result of the analysis can be seen in the following explanation.

Writing

Writing pre-test and post-test were conducted to reveal the impact of Project-Based Learning on students' writing skill. The students were assigned to do the same type of test from the pre-test and post-test. The test was an instructional test in which students were intended to develop a Descriptive Text based on the theme provided. The result of the writing pre test and post test can be seen in the table 1

Table 1 Frequency of Writing Test

	Mean Score	Below the mean score	Above the mean score
Pre Test	**72.19**	**20**	**16**
Post Test	**80.67**	**15**	**21**

Based on the result of writing test before implementing Problem Based Learning in the classroom, it was obtained that the mean score of the writing was 72.19. Moreover, from 36 students in class 8D there were 20 students (55.56%) who got score below the mean score. Meanwhile 16 students got score above the mean score (44.44%). It means that there were more than half students in class 8D of SMPN 1 Kuta Utara who did not achieve the mean score.

The result of writing test indicated that students' writing achievement in the post test, with the average score of 80.67, was higher than pre-test. Moreover, from 36 students in class 8D there were 15 students (41.67%) who got score below the mean score. Meanwhile, 21 students got score above the mean score (58.33%)..

The normality test was also done in order to know whether the obtained data were distributed normally or not. This test was administered by Kolmorogov-Smirnov formula by using SPSS 18.0 for windows. The criteria of the test used are the data can be categorized as normally distributed if the significance of the data is more than 0.05. the result of normality test of the questionnaire can be seen in the table 2.

Table 2 The Normality Test of Writing Test

	Pre-test_ writing	post_test_w riting
N	36	36
Normal Parameters[a,b] Mean	72.19	80.67
Std. Deviation	5.176	4.414
Most Extreme Differences	.136	.123
Absolute	.092	.123
Positive	-.136	-.090
Negative	.818	.736
Kolmogorov-Smirnov Z	.515	.651
Asymp. Sig. (2-tailed)		

For writing pre-test, the value of Kolmogorov-Smirnov statistic was .818 with significance score of .515. For writing post-test data, the value of Kolmogorov-Smirnov statistic was .736 with significance score of .651. both of those statistic showed that the significance of the statistics was higher than 0.05, which can be said that the data were normally distributed.

The next step done after normality test was parametric test. Since the data were normally distributed, Paired T-test was conducted. The acceptation criteria of the significant effect were if the significance scores less than 0.05. The result of the Paired T-test can be seen on the Table 3.

Table 3 Paired Samples Test Writing Test

	Mean	Std. Deviation	Std. Error Mean	
Pair 1 pre_test_writing - post_test_writing	-3.472	1.320	.220	
95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
Lower	Upper			
-3.919	-3.026	-15.784	35	.000

From the data above, it can be seen that there was an improvement of students' writing test from the mean score 72.19 before the treatment become 80.67 after the treatment. Moreover, the significance of the effect of Problem Based Learning on students' writing skill was .000. If the standard of significance is 0.05, it means that the significance data was less than the standard (sig. = 0.00 < α = 0.05). It can be concluded that there was a significant effect of Problem Based Learning on Students' writing skill of the eight grade students.

1. Speaking

In speaking there were two type of competences were being assessed, monologue and dialogue. In monologue test students were assigned to create and perform a simple monologue in form of recount individually. In dialogue test students were assigned to create and perform a dialogue which express offering, accepting, and refusing invitation. For dialogue test students did it with their partner.

Monologue

The speaking test was done in order to measure students speaking skill before and after the treatment given. In this study, the speaking skill was divided into two different type. Those were in form of monologue and dialogue. And the type of the test was speaking pre-test and post-test. For monologue pre-test and post-test, the students were given instruction to perform a monologue in form of recount text. The result of the speaking pre test and post test in form of monologue test can be seen in the table 4

Table 4 Frequency of Monologue Test

	Mean Score	Below the mean score	Above the mean score
Pre Test	**76.56**	**25**	**11**
Post Test	**81.19**	**17**	**19**

Based on the result of monologue test, the score was higher in the pre-test, in which 81.19. Moreover, from 36 students in class 8D there were 17 students (47.22%) who got score below the mean score. Meanwhile, 19 students got score above the mean score (52.78%).

The normality test was also done in order to know whether the obtained data were distributed normally or not in monologue test. This test was administered by Kolmorogov-Smirnov formula by using SPSS 18.0 for windows. The criteria of the test used are the data can be categorized as normally distributed if the significance of the data is more than 0.05. the result of normality test of the questionnaire can be seen in the table 5.

Table 5 The Normality Test of Monologue Test

	pre_test_monologue	post_test_monologue
N	36	36
Normal Parameters[a,b] Mean	76.56	81.19
StDeviation	3.791	3.311
Most Extreme Differences Absolute	.104	.152
Positive	.104	.085
Negative	-.091	-.152
Kolmogorov-Smirnov Z	.622	.910
Asymp. Sig. (2-tailed)	.834	.379

For monologue pre-test, the value of Kolmogorov-Smirnov statistic was .622 with significance score of .834. For writing post-test data, the value of Kolmogorov-Smirnov statistic was .910 with significance score of .379. Both of those statistic showed that the significance of the statistics was higher than 0.05, which can be said that the data were normally distributed.

The next step done after normality test was parametric test. Since the data were normally distributed, Paired T-test was conducted. The acceptation criteria of the significant effect were if the significance scores less than 0.05. The result of the Paired T-test can be seen on the Table 6.

Table 6 Paired Samples Test Monologue Test

	Mean	Std. Deviation	Std. Error Mean	
Pair 1 pre_test_monologue - post_test_monologue	-4.639	1.988	.331	
95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
Lower	Upper			
-5.311	-3.966	-14.002	35	.000

From the data above, it can be seen that there was an improvement of students' monologue test from the mean score 76.56 before the treatment become 81.19 after the treatment. Moreover, the significance of the effect of Problem Based

Learning on students' speaking skill specifically monologue was .000. If the standard of significance is 0.05, it means that the significance data was less than the standard (sig. = 0.00 < α = 0.05). It can be concluded that there was a significant effect of Problem Based Learning on Students' speaking skill specifically monologue of the eight grade students.

Dialogue

As well as students' speaking skill in presenting monologue, the students' dialogue performance was also taken into further analysis. For dialogue pre-test and post-test, the same type of test was given to them in pre-test and post-test. The test was in form of instruction in which the students were intended to perform dialogue with their partner in giving and responding to an invitation. The result of the Dialogue pre test and post test can be seen in the table 7.

Table 7 Frequency of Dialogue Test

	Mean Score	**Below the mean score**	**Above the mean score**
Pre Test	**76.64**	**23**	**13**
Post Test	**80.89**	**16**	**20**

Based on the result of speaking test in form of dialogue before implementing Problem Based Learning in the classroom, it was obtained that the mean score of the writing was 76.64. Moreover, from 36 students in class 8D there were 23 students (63.89%) who got score below the mean score. Meanwhile 13 students got score above the mean score (36.11%). It means that there were more than half students in class 8D of SMPN 1 Kuta Utara did not achieve the mean score.

The normality test was done in order to know whether the obtained data were distributed normally or not. This test was administered by Kolmorogov-Smirnov formula by using SPSS 18.0 for windows. The criteria of the test used are the data can be categorized as normally distributed if the significance of the data is more than 0.05. The result of normality test of the questionnaire can be seen in the table 8.

Table 8 The Normality Test of Dialogue Test

	pre_test_dialogue	post_test_dialogue
N	36	36
Normal Parameters[a,b] Mean	76.64	80.89
Std. Deviation	3.296	2.906
Most Extreme Differences Absolute	.155	.204
Positive	.098	.114
Negative	-.155	-.204
Kolmogorov-Smirnov Z	.928	1.227
Asymp. Sig. (2-tailed)	.355	.099

For Dialogue pre-test, the value of Kolmogorov-Smirnov statistic was .928 with significance score of .355. For writing post-test data, the value of Kolmogorov-Smirnov statistic was 1.227 with significance score of .099. Both of those statistic showed that the significance of the statistics was higher than 0.05, which can be said that the data were normally distributed.

The next step done after normality test was parametric test. Since the data were normally distributed, Paired T-test was conducted. The acceptation criteria of the significant effect were if the significance scores less than 0.05. The result of the Paired T-test can be seen on the Table 9 below.

Table 9 Paired Samples Test Dialogue Test

	Mean	Std. Deviation	Std. Error Mean	
Pair 1 pre_test_dialogue - post_test_dialogue	-4.250	2.285	.381	
95% Confidence Interval of the Difference		t	Df	Sig. (2-tailed)
Lower	Upper			
-5.023	-3.477	-11.160	35	.000

From the data above, it can be seen that there was an improvement of students' dialogue test from the mean score 76.64 before the treatment become 80.89 after the treatment. Moreover, the significance of the effect of Problem Based Learning on students' dialogue test was .000. If the standard of significance is 0.05, it means that the significance data was less than the standard (sig. = 0.00 < α = 0.05).

Based on the result of the data, generally both of the monologue and dialogue had improved between its pre-test and post-test. The following table is provided in order to present some information about the difference between both pre-test and post-test. The data can be seen in table 10.

Table 10 The Impact of Problem-Based Learning Towards Students' Speaking Skill

Speaking	**Mean Score**	
	Pre-Test	**Post-Test**
Monologue	76.56	81.19
Dialogue	76.64	80.89
Total Mean Score	76.6	81.04

In order to give complete information about the result of the data on the impact of Project-Based Learning toward students' English productive skills, the researcher also provided a table consists of the summary of pre-test and post-test result of English productive skills. The result is presented in table .11.

Table 11 The Impact of Problem-Based Learning Towards Students' English Productive Skills

English Productive Skills	**Mean Score**	
	Pre-Test	**Post-Test**
Writing	72.19	80.67
Speaking	76.6	81.04

The Impact of PBL on Students'Attitude toward English Language Learning

In order to see the difference between students attitude toward English Language Learning before and after given PBL treatment, close-ended and open ended questionnaire were distributed. The result of the data analysis can be seen in the following explanation.

Table 12 Result Close-Ended Questionnaire of Each Students' Attitude Types

Aspect	Criteria	
	Before Treatment	After Treatment
Behavioral	97.23	121.47
Cognitive	88.22	118.42
Affective	96.25	119.50

The result of the data analysis shows that there was a significant differences between students' attitude before the treatment and after the treatment (t = -7.47, and P = .000). The data indicates that the significance data was less than the standard (sig = .000 <α = .005).It can be concluded that there was a significant impact of Problem-Based Learning toward students' attitude.

In order to support the numeric data on the students' attitude toward English Language Learning in the form of description an open-ended questionnaire was also administered. Practically, similar with the close-ended questionnaire, the open-ended questionnaire was also distributed before and after treatment. The open-ended questionnaire itself was consisted in 3 questions which represented three types of students' attitude toward English Language Learning based on Wenden's theory namely behavioral, cognitive, and affective attitude.

The result of the open-ended questionnaire in term of students' behavioral attitude toward English Language Learning indicated there were 23 students responded negatively (64.28%). From the description most of the students' responses indicated that the students had lack of volition to participate in the learning process they had done in the classroom. The other 3 students (7.14%) responded neutrally by stating there was no typical behavior they had done during the learning process. Meanwhile, from 36 students, there were only 10 students (28.58%) who responded positively by saying they were willing to do the activity done during the learning process. The findings indicate that more than half of the students were giving negative responses toward learning before the Problem-Based Learning implemented in the classroom. Furthermore, after Problem-Based Learning was implemented, the students' answers towards the learning showed to have better response. The result of the students' answer indicated that 33 students (92.85%) had positive response on their behavior as the result of the happiness and excitement they got from doing the learning process. The other 3 students (7.15%) responded neutrally and had no typical behavior in doing the learning.

Secondly, the result of the open-ended questionnaire in term of students' cognitive attitude found out that there were 20 students (57.15%) responded to the learning negatively by stating that they faced some difficulties and felt weary as a result of monotonous activity during the learning process. Moreover, there were 9 (25.00%) students felt no distinctive quality toward the material in learning process. However, only 8 (17.85%) students who responded the questions positively. Their responses indicated that they were eager to learn because it was easy for them follow the activity such as doing task in the textbook and listening to the teacher's instruction. Meanwhile, after Problem-Based Learning was implemented in the classroom, the students' descriptive answers indicated that there were 25 positive response points from the students. From the description were known that the students could comprehend the knowledge well. Meanwhile, the other 9 students had no typical respond on the learning itself.

Thirdly, in term of students' affective, the result found that there were 23 students (64.28%) responded negatively by implying that they were felt unhappy and bored toward the learning process as a result of unexciting activity. The other 3 students (7.15%) indicated neutral response toward learning. The students' description represented that they had no particular willing toward the learning. Unfortunately, only 10 (28.57%) students had positive response toward the learning itself by pointing out that they were happy to do simple activity in the classroom. Meanwhile, after the treatment was implemented in the classroom, the result of the open-ended questionnaire indicated that 100% of the students gave positive response toward learning by stating they were happy doing activities in the classroom.

Table 13 The Summary of the Impact of Problem-Based Learning Towards Students' English Productive Skills

NO	Impact on	Mean Score		Analysis Result (Sig.)
		Before Treatment	After Treatment	
1.	Students' Attitude towards ELL	153.46	187.39	.000
2.	English Productive Skills.	**Pre-Test**	**Post Test**	
	a. Writing Skill	72.19	80.67	.000
	b. Speaking Skill	76.6	81.04	.000

In addition, to provide complete information about the general result of the impact of Problem-Based Learning on English Language Learning, the researcher presents table 13. Based on the result of the data, Problem-Based Learning was proved to have a significant impact both in students' English productive skills and attitude. It can be seen in the following table. The table 13s shows there is an impact of Problem-Based Learning towards students' attitude and English productive skills. The significant impact was showed by both of the result of students' attitude towards English language learning and students' productive skills on its each pre-test and post-test (sig. = .000).

From the findings above it was found that Problem-Based Learning is a process of learning which demands students' responsibility towards their own education process. Students are working collaboratively in doing the task given. The sense of authentic and meaningful context of learning is also presented in the Problem-Based Learning and students are given chance to have hands-on experience. Significant difference was found on both students' speaking skill and writing skill after its implementation. Problem-Based Learning also brought positive enhancement on students' overall language skills including speaking and writing skill, with also the improvements on students' practice skills such as teamwork, decision-making and problem-solving skills.

Problem-Based Learning was able to increase students' enthusiasm for learning. When the children are excited and enthusiastic about what they are learning, they often get more involved in the subject, the level of anxiety is reduced and then expand their interest to other materials. Enthusiastic students tend to retain what they learn, not to forget it as soon as they have passed the test.

Problem-Based Learning revealed to enhance students' learning ability in self-directed and collaborative learning. The facts found that students really attempted to learn together in form of group work but also had chance to take initiative and responsibility for learning. While working in a group, the students did some activities such as asking one another for information, evaluating one another's ideas, monitoring one another's work and actively interacted by sharing idea, etc. Individually, each of the student were given chance to select and manage their own work. These activities were done in order to maximize their own and each other's learning.

IV. CONCLUSION

This study has provided an empirical evidence that Problem-Based Learning has significant impacts on students' productive skill and attitude. This conclusion can be drawn by looking at the improvement of student mean score during the pre-test and post-test. The attitude of students toward English Language Learning has also changed after given the treatment of Problem-Based Learning, it can be seen from the result of the questionnaire given. The significant impacts given by Problem-Based Learning instruction indicate that this approach can be taken into consideration by the teacher as an approach to be implemented in the classroom in general, or in EFL classes in particular.. Besides giving positive impact on students skill and attitude, Problem-Based Learning has also been observed to build learner critical thinking, self directed learning, and problem solving skill.

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The Importance of Physics Text Book in Connecting Concepts and Principles with Character Values and Social Attitude as well as Spiritual Attitude

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***Abstract*—Physics textbooks until now only contain a tangle of concepts and principles. This study aimed to describe the importance of linking physics concepts and principles in textbooks with character values, social and spiritual attitudes. This research was conducted in 27 SMAs from 9 Regencies in Bali. Its subjects are 27 principals of the SMAs, 54 physics teachers, and 540 SMA's students. The responses of the subjects to the developed physics textbook were collected by questionnaire and analyzed descriptively. The results of the analysis showed that the physics concepts and principles in the textbooks are very important to connect with associated character values, social and spiritual attitudes. The Principals and teachers said that these are needed as a medium of learning physics which are meaningful for the students in order to be able to construct good character as well as good social and spiritual attitudes. So physics textbooks become meaningful.**

Keywords—physics textbooks, concept and principle, character values, social attitudes, and spiritual attitudes

I. INTRODUCTION

Reliable and contextual illustrations are needed as the substance of physics textbooks. This serves as one of the ways to attract the students' interest in reading. As an illustration of the substance of physics textbook, aspects of character, social, or spiritual[1] are presented. But in reality, physics textbooks, especially those used in high school, so far only contained concepts, principles, and drill[2]. Physics textbooks which relate concepts and principles to the character values, social attitudes, and spiritual attitudes are the basis of developing the student competencies— but have not found yet in educational praxis. This is thought to be one of the underlying causes which make the students are less interested to learn physics [3, 4]. The low interest of students in learning physics will certainly affect the low of the students' learning outcomes in physics.

The results of physics study of high school students only reflect the value of knowledge and intellectual skills[5, 2, 1]. In fact, later in the real world (in society), students are expected to have not just intellectual ability. Actual life in society also requires good character, social attitudes, and spiritual attitudes[6, 7, 8, 9, 1, 10, 11, 12, 13]. Therefore, the packaging of textbooks should accommodate the needs of students not only to develop intellectual knowledge and skills, but also to build good character, develop positive social attitudes, and promote good spiritual attitudes.

Physical education praxis is implemented with the aim to familiarize the students to be able to recognize nature. Similarly, the study of physics in high school aims for students to recognize and understand the nature of themselves as humans and the universe where they stand. The world and its dynamics studied in physics, describe the Almighty God in the form of macrocosm, while humans describe the Almighty God in the form of microcosm. Students in high school who have reached the age of formal operations should have been able to think abstractly of the relationship between themselves as humans (microcosm) and the universe (macrocosm).Abstractive thinking abilities are not only oriented to intellectual ability, but also character, social attitudes, and spiritual attitudes [10]. One way to help students in developing abstractive thinking abilities is to develop physics textbooks that substantially connected to the concepts and principles of physics with the values of character, social attitudes, and spiritual attitudes.

Character values are the positive psychological aspects embodied in man. Psychologically, character values include cognitive, affective, and moral aspects of behavior [11, 10]. Cognitive values include vigilance, virtue, attractiveness in perspective, reasoning, decision making and maturity. The values of attitudes include loving and acting justice, self-respect, empathy, loving kindness, and humility. Moral aspects of behavior include moral knowing, moral feeling, and moral action. Good character values include knowing the good, desiring the good, and doing the good. Doing good consists of habits of the mind, habits of the heart, and habits of the behavior. Moral action consists of moral competence, moral will, and moral habit.

Social attitude is the attitude to establish relationships between students. Social attitudes include the attitude of organizing groups, negotiating solutions, maintaining personal

relationships, and conducting social analysis [2]. Social attitudes of organizing groups include initiating and coordinating efforts to mobilize people, negotiating solutions, preventing conflict and resolving conflicts, reaching agreement, overcoming or mediating disputes, proficient in diplomacy, law, reconciliation, relationships, empathy in relationships, and responding to the feelings and concerns of others, the attitude of social analysis, understanding the feelings, motives, and concerns of others.

Spiritual attitudes are attitudes which reflect students' struggles and experiences in relation to the essence of life that encompass three main dimensions: self-relation, relationship with others and the universe, and relationship with the transcendent[7, 10]).Based on the three main dimensions, it can be differentiated as dimensions of spiritual attitudes, as follows: living a meaningful and harmonious, happy, peaceful side by side, private context community-oriented, loving environment, respect for diversity, speak positive, truthful, have a positive purpose in the life of a group, offer a good healing to others selfless love of God, has a personal relationship with God, have a cooperative spirit with others, have a sustainable prayer group, self-confidence, trust in others, trust in God.

Based on the background of the above issues, the following research questions are asked. 1) What is the principal's response to the substance of a physics textbook which links to the concepts and principles of physics with the values of character, social attitudes, and spiritual attitudes? 2) How does the physics teacher respond to the relevance of the relationship between concepts and principles of physics to the values of character, social attitudes, and spiritual attitudes that are the substance of physics textbooks? 3) What is the student's response to the relevance of the relationship between concepts and principles of physics to the values of character, social attitudes, and spiritual attitudes which are the substances of physics textbook?

II. METHOD

This research is conducted by survey method to describe two main things, namely 1) teacher and student response about the relevance of the relationship of concepts and principles that become the substance of physics textbook with the character values, social attitude, and spiritual attitude, 2) the response of principals, physics teachers, and high school students about the importance of physics textbooks connecting to the concepts and principles of physics with the character values, social attitudes, and spiritual attitudes.

This research was conducted on 9 regencies / cities in Bali. In each district / city 3 (three) high schools are selected, each located in urban, suburban, and in the village. Thus, this study was conducted on 27 SMA involving 27 headmasters of high school. In each SMA were selected 2 (two) physics teachers, so this study involved 54 high school physics teachers. Each physics teacher is asked to invite 10 (ten) students of class X, so there are 540 high school students involved in answering this research questionnaire.

The responses of the principals, physics teachers, and students were collected by questionnaire. The questionnaire is about the importance of physics textbooks in relation to the concepts and principles to the character values, social attitudes, and spiritual attitudes consisting of 3 (three) devices, each of which is used to collect the responses of the principals, physics teachers, and students. Each device consists of 3 (three) items. Each item of the questionnaire provided 4 (four) answer options with grading scale 4, 3, 2, 1. Scale 4 means very important, 3 means important, 2 means less important, and 1 means not important.

The response of physics teachers and students to the relationship of concepts and principles to the character values, social attitudes, and spiritual attitudes are collected by questionnaire. The questionnaire consists of 2 (two) devices, each of which is used to collect the responses of the physics teachers and students. Each device consists of 9 (nine) statement items. Each item is provided 4 (four) answer options with grading scale 4, 3, 2, 1. Scale 4 means very relevant, 3 means relevant, 2 means less relevant, and 1 means irrelevant. Research data were analyzed descriptively.

III. FINDING

The first thing that became the findings of this research is the exploration of the character values, social attitudes, and spiritual attitudes contained in the concepts and principles of physics. These are included as the substance of physics textbooks. This section presented 3 (three) concepts and principles of physics.

A. An Example Of The Concept And Principle Of The Unit, Inertia, And Elasticity

The results of the exploration of character values, social attitudes, and spiritual attitudes related to the concepts and principles of unit, inertia, and elasticity (i.e. only examples) which are the substance of physics textbooks are presented in Table 1.

TABLE 1.THE RELATIONSHIP BETWEEN CONCEPT AND PRINCIPLE TO THE CHARACTER VALUES, SOCIAL ATTITUDE, AND SPIRITUAL ATTITUDE

No	Concept and Principle	Character Values	Social Attitude	Spiritual Attitude
1	**Concept of the Unit:** Size measurement statement, comparator measurement magnitude **Principle of the unit:** SI, MKS, CGS, The value is fixed, international, replicable and replicable, easily converted to other units, standard units are used in general, non-standard units are used based on local wisdom	Tolerance, democratic, social, and caring about the environment. Magnitude will have no meaning if it is not a unit. The presence of units to complete the magnitude is a character of tolerance for the magnitude to have meaning. The character of tolerance is followed by democratic, social, and environmental character.	Respect the difference and accept the deal. The first attitude stems from the principle of unit differences in the MKS and CGS systems that actually have the meaning of similarity in difference. The second attitude comes from the standard principle which is a manifestation of international conventions.	Caring is the drive to do something for others, understanding people's needs, awareness to contribute to society, and awareness of wanting to benefit others. Attitudes are sourced from the concept and the principle of the unit whose presence is very important for the concept and principle of magnitude.
2	**Concept of Inertia:** Laziness **Principle of Inertia:** The nature of matter that tends to maintain its comfort zone, which keeps silent, which moves on and on. This property can change if it is given a push or pull from the outside. Accommodation to a pull or pull from the outside will make the change leave the comfort zone and become dynamic resulting in acceleration, a = F / m, a = acceleration, F = stroke or external impulse, m = mass (mass = property of inertia)	Character influences through the provision of motivation and exemplary for adults, teachers, or parents. Motivate yourself with hard work, creative, independent, dynamic, and responsibility. Hard work is a character of sincerity overcoming obstacles, creative is the character of thinking and doing something that produces new ways based on the potential possessed, independent is the character of not dependence on others, dynamic is the character that accepts the challenge, and the responsibility is the character of carrying out duties and obligations.	The attitude of acceptance and confidence. A material strongly influenced by its inertia can accept external influences. Such influences can be encouragement or pull. Students who are part of the material that has the soul, is certainly able to develop the attitude of acceptance, both encouragement and pull. Acceptance is followed by self-confidence.	Trust, acceptance, and caring. Two things related to belief are 1) attitude to overcome life with all its implications, 2) attitude of trying to interpret life that must be accepted. Both of these attitudes lead to an awareness-based acceptance attitude to do something for the realization of interaction, and awareness to take a role in the environment.
3	**Concept of Elasticity:** Flexibility **Principle of elasticity:** Although the material is elastic, it is bound to inertia and limitations. External influence that exceeds the limit of elasticity causes damage to the material. Material elasticity is subject to Hook's law, that there is a Hook force whose direction is always opposite to outside forces. Hook force tends to restore the condition of being pushed or attracted to its original state.	Character of discipline, love of peace, and care for the environment. Discipline, is the character values which demonstrates orderly behavior and complies with various rules and regulations. Peaceful love lies in the elastic soul, the value of a patient character that causes others to feel happy and secure for their presence. Elastic soul has a good concern, including the environment. Caring for the environment, it is the value of a character that always strives to prevent damage to the surrounding natural environment, and develops efforts to repair the already existing natural damage.	Being honest acknowledged mistakes, responsibility by accepting risks and willingness to apologize, cooperate and willingly share, cooperate sincerely. Social attitudes accept interaction from outside has good benefits for life, because defensive and resistance-based efforts of inertia can harm yourself, others, and the natural environment.	Attitudes understand the meaning of trust-based life. The attitude is sure to try to make sense of what life should be accepted. The attitude of acceptance and consciousness that every life has its own tragedy, awareness finds difficulties, consciousness does things without regard to consequences, cares about doing something useful to others, and makes meaningful contributions to society, and connects with nature, senses a sensation The powerful, and the spiritual activity by feeling there is a higher power that provides guidance in life.

The relationship of concept and principle of unit, inertia, and elasticity with the character values, social attitudes, and spiritual attitudes as presented in Table 1 are presented at the beginning of each chapter or sub chapter, depending on the need. Matters in concerning the importance of substance are responded by principals, physics teachers, and students. In terms of the relevance of the relationship of concept and principle of unit, inertia, and elasticity to the character values, social attitudes, and spiritual attitudes, the physics textbook is responded by physics teachers and students.

B. Respond of The Principals

The principal's response to the importance of textbooks relating concepts and principles to the character values, social attitudes, and spiritual attitudes is presented in Table 2.

TABLE 2. RESPONSE OF THE PRINCIPALS (N=27) ON THE CONTENT OF PHYSICS TEXTBOOK

No	Description	% Responses			
		4	3	2	1
1	The importance of linking concepts and principles of physics with character values	74	26	0	0
2	The importance of linking concepts and principles of physics with social attitude	67	33	0	0
3	The importance of linking concepts and principles of physics with spiritual attitude	78	22	0	0
4=very important, 3=important, 2=less important, 1=not important					

Table 2 states that the principals' response is very important and important about the relationship of concepts and principles with character values, social attitudes, and spiritual attitudes.

C. Respond of the Physics Teachers

The physics teachers' response to the relevance and importance of the relationship of concepts and principles of physics to the character values, social attitudes, and spiritual attitudes is presented in Table 3 and Table 4.

TABLE 3 RESPONSE OF THE TEACHERS (N=54) ON THE RELEVANCE OF THE CONTENT

No	Description	% response			
		4	3	2	1
1	Relevance of the relationship between concepts and principles of units with character values	65	30	5	0
2	Relevance of the relationship between concepts and principles of units with social attitude	70	24	6	0
3	Relevance of the relationship between concepts and principles of units with spiritual attitude	81	11	8	0
4	Relevance of the relationship between concepts and principles of inertia with character values	76	20	4	0
5	Relevance of the relationship between concepts and principles of inertia with social attitude	71	25	4	0
6	Relevance of the relationship between concepts and principles of inertia with spiritual attitude	73	20	7	0
7	Relevance of the relationship between concepts and principles of elasticity with character values	75	25	0	0
8	Relevance of the relationship between concepts and principles of elasticity with social attitude	70	30	0	0
9	Relevance of the relationship between concepts and principles of elasticity with spiritual attitude	66	30	4	0
4=very relevant, 3=relevant, 2=less relevant, 1=not relevant					

Table 3 states that physics teacher response is categorized as high relevant and relevant about the relationship of concepts and principles with character values, social attitudes, and spiritual attitudes.

TABLE 4. RESPONSE OF THE TEACHERS (N=54) ABOUT THE IMPORTANCE OF THE CONTENT

No	Description	% response			
		4	3	2	1
1	The importance of linking concepts and principles of physics with character values	67	33	0	0
2	The importance of linking concepts and principles of physics with social attitude	78	22	0	0
3	The importance of linking concepts and principles of physics with spiritual attitude	83	17	0	0
4=very important, 3=important, 2=less important, 1=not important					

Table 4 states that the physics teachers' response is very important and important about the relationship of concepts and principles with character values, social attitudes, and spiritual attitudes.

D. Respond of the Students

The students' response to the relevance and importance of the relationship of concepts and principles of physics to the character values, social attitudes, and spiritual attitudes is presented in Table 5 and Table 6.

TABLE 5. RESPONSE OF THE STUDENTS (N=540) ON THE RELEVANCE OF THE CONTENT

No	Description	% response			
		4	3	2	1
1	Relevance of the relationship between concepts and principles of units with character values	68	28	4	0
2	Relevance of the relationship between concepts and principles of units with social attitude	72	24	4	0
3	Relevance of the relationship between concepts and principles of units with spiritual attitude	85	10	5	0
4	Relevance of the relationship between concepts and principles of inertia with character values	70	25	5	0
5	Relevance of the relationship between concepts and principles of inertia with social attitude	78	20	2	0
6	Relevance of the relationship between concepts and principles of inertia with spiritual attitude	76	20	4	0
7	Relevance of the relationship between concepts and principles of elasticity with character values	72	25	3	0
8	Relevance of the relationship between concepts and principles of elasticity with social attitude	66	32	2	0
9	Relevance of the relationship between concepts and principles of elasticity with spiritual attitude	74	22	4	0
4=very relevant, 3= relevant, 2=less relevant, 1=not relevant					

Table 5 states that the students' responses are categorized highly relevant and relevant about the relationship of concepts and principles of physics to the character values, social attitudes, and spiritual attitudes.

TABLE 6. RESPONSE OF THE STUDENTS (N=540) ON THE IMPORTANCE OF THE CONTENT

No	Description	% response			
		4	3	2	1
1	The importance of linking concepts and principles of physics with character values	63	30	7	0
2	The importance of linking concepts and principles of physics with social attitude	74	18	8	0
3	The importance of linking concepts and principles of physics with spiritual attitude	70	25	5	0

1. 4=very important, 3=important, 2=less important, 1=not important

Table 6 states that the students' responses are categorized very important and important about the relationship of concepts and principles of physics to the character values, social attitudes, and spiritual attitudes.

IV. DISCUSSION

Physical learning in schools focuses more on mathematical aspects, less emphasis on concepts and principles, and rarely has effort to cultivate values of character, social attitudes, and spiritual attitudes. One reason is that physics books used by the students tend to contain only concepts, principles, and drill. The purpose of this study is to describe the responses of principals, physics teachers, and students about the relevance and importance of physics textbooks linking concepts and principles with character values, social attitudes, and spiritual attitudes.

The results show that the principal states that substantially physics textbooks are not sufficient to contain only concepts, principles and drill, but it is also important to relate them to the character values, social attitudes, and spiritual attitudes. The principal's response was reinforced by the responses of physics teachers and students that physics textbooks thought they were important to relate the concepts and principles of physics to the character, social attitudes, and spiritual attitudes. The relationship between concepts and principles of physics with the character values, social attitudes, and spiritual attitudes described in physics textbooks, according to physics teachers and students is very important.

These findings suggest that physics textbooks which relate physics concepts and principles to values of character, social attitudes, and spiritual attitudes become very meaningful. This finding is consistent with previous findings, that learning to ignore the last three aspects is an attempt to provide opportunities for students to build meaningful ethical and spiritual lives, and better character [14].

The substance of such books can serve as a basis for learning in the classroom. The emphasis of concept and principle of physics is important in learning, because the concepts and principles also have a strategic role in shaping students' understanding of the nature of physics. However, it will become more important and meaningful if a deep understanding of the concepts and principles of physics is enriched with the description of the relationship of understanding to build good character, social attitudes, and spiritual attitudes in the study of physics. Therefore, learning physics in high school should be oriented more on the study of the relationship of concept and principle with the values of character, social attitudes, and spiritual attitudes. This is important, so that students will be better prepared to live in the real world that cannot be separated from others, the universe as a place to stand, and its relationship with God.

In the study of Hinduism, it is mentioned that God exists in every object in both moving and immovable universes [15, 16, 17]. The meaning contained in these sacred texts indicates that God is the soul of the macro and the micro nature. Physics is a branch of science that studies matter and energy. Substance describes nature, while energy describes its natural soul. This is in accordance to the opinion of universe observers and their laws as follows: 1) Henry Beston declared that universe is a part of humanity, a man who does not understand it has bad character and attitude; 2) Goethe states that universe is life, the existence of God can be seen, 3) Reid argues that universe law is a rule created according to the resulting impact; 4) Longfellow also argues that the laws of universe are just, though frightening; 5) Charles Dickens states that universe gives beauty throughout the ages; 6) Alfred Street declares that universe is the master of mankind [18]. The expert's views of "universe" though tend to be theological bases that have limited scientific value, but give an indication of how important it is for humans to learn the nature of universe and its laws. Scientifically, the nature of "universe" can be explained by two studies, 1) ontologically, that the nature of universe is composed of substances that are the basic components, 2) epistemologically, that universe as knowledge can be learned through the scientific process. Both studies can be accommodated in physics, at both the secondary and college levels.

In the context of complete human development, the synergy between scientific and theological studies of the nature of universe is needed, so that it can give rise to a welfare of theology of science [11]. Although the study of physics can describe the relationship between the micro and the macro, but the characteristics of the relationship is very complex. Every concept and principle of physics has an interesting secret to build the characters, social attitudes, and spiritual attitudes of students [19, 20, 21]. These three things are very important for students when they are in the community as a developer of physics-based science and technology. Development of science and technology based on the character values, social attitude, and good spiritual attitude is the desire of society in order to realize a good civilization. Therefore, physics textbooks which connected to the concepts and principles of physics with the character values, social attitudes, and spiritual attitudes become very strategic. In the short term, the benefit is to enrich the content of learning resources and physics learning devices in schools, so that physics learning has an orientation not only limited to the meaning of science and technology, but also build awareness of the importance of civilization that wraps character, social attitudes, and good spiritual attitudes. In the long run, this textbook becomes a pilot for the importance of critical and creative thinking in creating meaningful and relevant learning facilities in life.

V. CONCLUSIONS AND SUGGESTIONS

The conclusions of this study are as follows. 1) According to the principal, the substance of physics textbooks is very important linking the concepts and principles of physics with the character values, social attitudes, and spiritual attitudes. 2) According to the physics teacher, the relationship of concepts and principles of physics to the character values, social attitudes, and spiritual attitudes that become substances into the substance of physics textbook is very relevant. Physics teachers also claim that the substance of physics textbooks is very important to relate the concepts and principles of physics to the character values, social attitudes, and spiritual attitudes. 3) According to the student, the relationship of concepts and principles of physics with the character values, social attitudes, and spiritual attitudes which become the substance of physics textbooks, is highly relevant. The students also stated that the substance of physics textbooks is very important to connect the concepts and principles of physics with the character values, social attitudes, and spiritual attitudes.

The results of this study can be used as the basis of policy by the principal in supervising physics teachers, that the development of physics textbooks is very important to connect the concept and principles of physics with the values of character, social attitudes, and spiritual attitudes. To the students it is suggested that in studying physics not only aims to build intellectual ability, but also fosters the character values, social attitudes, and spiritual attitudes, so the physics learning becomes meaningful and relevant for life in the real world.

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Tourism Destination Image of Bali According to European Tourist

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***Abstract*— This research was conducted in the province of Bali which aims to determine the attraction factors as the main attraction of tourism Bali from perspective of European, and also to determine the factors that predominantly determine European travel to Bali. The research was designed by using research survey that involving 167 European tourists. Exploratory factor analysis techniques are used to analyze a wide range of variables Balinese charm. The main attraction of tourism Bali are (1) the immigrations, security of destinations, and travel agencies, (2) the prices, the accommodations, foods and transportations, (3) the history, culture, and natural beauty. While the most dominant factors in determining European tourists traveled to Bali are immigrations, security destinations, and travel agencies. The study's findings also indicate that the images of Bali tourism are the destination's history, culture, and nature.**

Keywords— destination image, charm, history, culture, scenery, European tourists

I. INTRODUCTION

Recently, many people assume that the culture of Bali is the main attraction of tourism Bali has undergone a change and even considered has been degraded. In the similar side, natural resources of Bali also considered to have been degraded over the development of tourism in Bali. However, the fact of those tourist arrivals of European tourists are quite sensitive to both issues that actually increased to 135,215 people during for two month period from January to February 2016. The increasing numbers are accounted for 18.61 percent or 726,625 people of all foreign tourists who traveled to Bali. The arrivals of European tourists who travel to Bali every month are increased by 67,026 people during January, to 68,219 people in February 2016. Although the economic conditions of Europe have not been too favorable, but tourists from that region remained increasing consistently. The increasing number of European tourist is considered that Bali Island has power to attract them to visit Bali.

Indeed, tourism market share can be divided by various categories, such categories of origin, age, occupation, education, etcetera which can be observed empirically. This study was conducted to explore the existences of important tourist attraction variables to determine which factors are as the main attraction of Bali from the perspective of European tourist who visited Bali. This study is exploratory analysis to determine the existence of the tourist attraction of Bali Island as the tourism destination from perspective of European tourist. The research problems are defined in this study: (1) what factors are the main attraction of Bali destination from perspective European tourist? (2) Which factors determine the dominant European tourist to visit Bali?

II. LITERATURE REVIEW, THEORY AND CONCEPTS

Currently, there are still a lot of debating on differing views on the components about the image of the destination. For example, Fakeye and Crompton assumed that the destination image consists of only cognitive component, whereas perceptual or cognitive evaluation only refers to an individual's knowledge and belief in an object perceived or evaluated [1]. Mazursky and Jacoby considered that consumers build an overall image based on the evaluation of various attributes that consist of goods and services [2]. Likewise, Gartner stated that the perception of tourists to various destinations attributes will interact in shaping the image of the overall image [3]. However, Keown et al., have been tested by the empirical fact that there is a relationship between cognitive attributes and overall image, and conclude that the overall impression is dependent upon the attributes of destinations based on the perception of tourists individually [4].

Milman and Pizam stated that cognitive offers three components that determine the image of destinations, namely: attractions, the host's behavior and attitude, and the environments such as climate, facilities, and etcetera [5]. Meanwhile, Goeldner and Ritchie identified that cognitively, destination image consists of a psychological component rating, uniqueness, and destination attributes holistically [6]. Furthermore, Chi has conducted research and classify the nine attributes that affect the overall image of the destination, namely (1) the attributes of nature, (2) the opportunities rating for fun and recreations, (3) the natural environments, (4) public facilities, (5) the cultures, histories, and arts, (6) the social environments, (7) the tourism infrastructures, (8) economic and political factors, and (9) the atmosphere destinations [7]. In order to maintain and improve the growth of the market segment of European tourists, required creativity and innovation in managing the business and product packaging to reach the preferences of tourists, especially European tourists. The behavior of European tourists can be seen from their lifestyle based on the dimensions of cultural

differences, which can be seen from the dimensions of self attitude and lifestyle dimensions simultaneously.

This study is the exploration of the existences of the Bali tourism attractions with the participation of European tourists. This research is expected to result in significant and meaningful information for sustainability of Bali tourism destinations. In this context it becomes important to investigate the attractions and motivations of European tourist to visit Bali. The image and destination attractions are perception formed from a variety of information received by tourists. Each tourism destination has particular attraction and image that contains beliefs, impressions, and perceptions of a destination. The image formed is a combination of various factors that exist in destinations such as the weather, landscapes, security, health and sanitations, hospitality, and others [8][9]. Attractiveness and image of the destination is always experiencing the dynamics over the development technology, communication and information should be more used by media, audio, visual and so research on the image of destinations should be done so that these dynamics can be determined.

III. RESEARCH METHOD

The quantitative approaches are used in this study to find the attraction destination variables from perspective of European tourists. The application of theories and concepts related destinations to formulate the strategy so that the number of European tourists who visit Bali can be increased.

This research was conducted in the province of Bali in periode of April to August 2016, and was designed using research survey to collect data that involving 167 European tourists as respondents. The respondents were selected purposively when they are on vacation in Bali. Exploratory factor analysis techniques are used to analyze a wide range of destination attraction factors that expected to produce a couple of dominant factors determining the European tourists.

Factor analysis is done through the various phases that define a number of variables corresponding to research problems, then determine the adequacy of the respondents, and then factor analysis with rotation of factors, grouping factor , then the naming factor appropriate representation of the variable constituent, and the last stage is determine factor model accuracy [10].

IV. RESEARCH FINDING AND EXPLANATION

A. Respondent Profile

Based on their gender groups of 167 respondents who participated in this study, illustrated that male respondents are more dominant which is about 58.1 percent compared with the female respondents which is about 41.9 percent, that can be seen as on the Table 1 below:

TABLE I. RESPONDENTS PROFILE BY GENDER

Gender	Number of Respondent	Percentage
Male	97	58.1
Female	70	41.9
Total	167	100

Source: Primary Research Finding, 2016

However, based on the frequency of their visiting Bali from 167 respondents are illustrated that the dominant respondents had traveled more than twice to Bali which is about 46.7 percent, 33.5 percent for visiting in the first time, and 19.8 percent visited Bali for the second time as seen as in Table 2 below:

TABLE II. THE FREQUENCY OF THEIR VISITING BALI

Visiting Bali	Number of Respondent	Percentage
Second visit	33	19.8
More than twice	78	46.7
First time visit	56	33.5
Total	167	100

Source: Primary Research Finding, 2016

Based on their nationality of 167 respondents, reflected that respondents mainly from the Dutch about 24.6 percent, and German about 16.2 percent, French about 9.6 percent, British 9 percent and the Italian, Swiss, Russian , Swede, Belgian, Spaniard, Finn, Irish, Dane, the Norway, Others as seen as on Table 3 below:

TABLE III. NATIONALITY OF RESPONDENTS

Nationality	Number of Respondent	Percentage
Dutch	41	24.6
German	27	16.2
French	16	9.6
British	15	9.0
Italian	13	7.8
Swiss	13	7.8
Russian	8	4.8
Swede	8	4.8
Belgian	7	4.2
Spaniard	4	2.4
Finn	3	1.8
Irish	3	1.8
Dane	2	1.2
Norwegian	2	1.2
Others	5	3.0
Total	167	100

Source: Primary Research Finding, 2016

B. Images of Bali According European Tourists

The finding of the survey from 167 respondents as seen as on Table 4 were analyzed using statistic description based on the main destination attractions of Bali, that can indicate the variables of the beauty of the scenery, Balinese culture, and history of Bali are ranked on the top ranking that means they have a very strong attractiveness to attract European tourists to visit Bali.

TABLE IV. THE PERCEPTION OF EUROPEAN TOURISTS ABOUT BALI

Variables	Mean	Remarks	Rank
The beauty of the scenery	4.4431	Very good	1
Balinese Culture	4.3413	Very good	2
History of Bali	4.2754	Very good	3
Variations Travel Attractions	3.9401	Good	4
Events and Festivals	3.9222	Good	5
The Variant of Culinary	3.8503	Good	6
Prices of Goods and Services	3.6946	Good	7
Distance from Origin Country	3.6407	Good	8
Facilities and Services Hotel	3.5389	Good	9
Transportation	3.3952	Average	10
Quality of Service Travel Agent	3.3772	Average	11
Facilities and Services Wellness	3.3353	Average	12
Security on Destinations	3.2874	Average	13
Quality Services Guides	3.2395	Average	14
Immigration services	3.0599	Average	15

Remark: (1,00-1,80 = Very bad), (1,81-2,60 = bad), (2,61-3,40 = Average), (3,41-4,20 = Good), (4,21-5,00 = Very good)

While the variables that have the average perceptions are the security of destinations, service guides, and immigration services. All these three variables indicate that these are still not fully convinced them that traveled to Bali from perspective of European tourists. However, from the 15 variables were analyzed descriptively, show that the variation of attractions, events and festivals, culinary, prices of goods and services, the distances from the country of origin, the facilities and the hotel services, transportations, quality of services of travel agent, as well as facilities and wellness services are evaluated enough to convince respondents that traveled to Bali.

C. Attractiveness of Bali Destinations According European Tourist

Determine the variables that are considered eligible to be included in subsequent factor analysis, by imposing a number of tests on all variables, and remove variables that proved unfeasible. In this case the method KMO and Bartlett Test of Sphericity, measurement MSA (Measure of Sampling Adequacy) as well as testing with Anti Image Matrices. The test results as seen as on the Table 5 shows that the value of Kaiser-Meyer-Olkin Measure of Sampling Adequacy is about 0.840 which means the number of respondents statistically is adequate for factor analysis.

TABLE V. KMO AND BARTLETT'S TEST

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.840
Bartlett's Test of Sphericity	*Approx. Chi-Square*	1153,343
	df	105
	Sig.	0.000

Extraction Method: Principal Component Analysis.

The factoring process is to do the extraction of the set of variables which are to determine one or more factors. The method used to perform the extraction process is the Principal Component Analysis. Table 6 shows that the results of the analysis that determined by the three components or factors with eigenvalues initial cumulative percentage about 59.838 percent.

TABLE VI. TOTAL VARIANCE EXPLAINED

	Initial Eigenvalues		
Component	*Total*	*% of Variance*	*Cumulative %*
1	5.765	38.433	38,433
2	1.989	13.258	51,691
3	1.222	8.147	59,838

Extraction Method: Principal Component Analysis.

The next process is the process of rotation to determine factors. The results of the rotated analysis of Component Matrix as seen as Table 7 shows that the variable the beauty of the scenery, Balinese Culture, and History of Bali are formed as factor 3. While the variable prices of goods and services, events and festivals, variation tourist attractions, transportations, distance from the country of origin, varieties of culinary, hotel facilities and services are formed as factor 2, and variable of facilities and wellness services, immigration services, destination safety, quality of service travel agent, tour guide service are formed into factor 1.

TABLE VII. ROTATED COMPONENT MATRIX

	Component		
Variables	1	2	3
The beauty of the scenery	0.065	0.314	*0.813*
Balinese Culture	0.141	0.115	*0.890*
History of Bali	0.053	0.062	*0.758*
Variations Travel Attractions	0.270	*0.635*	-0.034
Events and Festivals	0.164	*0.506*	0.497
The Variant of Culinary	0.091	*0.689*	0.111
Prices of Goods and Services	0.308	*0.648*	0.227
Distance from Origin Country	0.329	*0.563*	0.212
Facilities and Services Hotel	-0.007	*0.616*	0.206
Transportation	0.361	*0.612*	0.130
Quality of Service Travel Agent	*0.549*	0.296	0.381
Facilities and Services Wellness	*0.815*	0.155	0.195
Security on Destinations	*0.788*	0.148	0.084
Quality Services Guides	*0.849*	0.145	-0.034
Immigration services	*0.721*	0.386	0.047

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 5 iterations.

Naming each of the factors that have been determined, it can be started from a factor that has the greatest eigenvalues to the smallest as sees as Table 8 below:

TABLE VIII. NAMING FACTORS

Factor	Variables	Correlations	*Initial Eigenvalues*	
			Total	*% of Variance*
The immigration, security of destination, and travel agencies	Facilities and Services Wellness	0.549	5.765	38.433
	Immigration services	0.815		
	Security on Destinations	0.788		
	Quality of Service Travel Agent	0.849		
	Quality Services Guides	0.721		
The prices, the accommodation, food and transportation	Prices of Goods and Services	0.635	1.989	13.258
	Events and Festivals	0.506		
	Variations Travel Attractions	0.689		
	Transportation	0.648		
	Distance from Origin Country	0.563		
	The Variant of Culinary	0.616		
	Facilities and Services Hotel	0.612		
The history, culture, and natural beauty	History of Bali	0.813	1.222	8.147
	Balinese Culture	0.890		
	The beauty of the scenery	0.758		

Test the accuracy of the model determine that "Residuals are computed correlations between observed and Reproduced are 53 (50.0%) as non redundant residuals with absolute values greater than 0:05". The accuracy test means that the model has been formed trustworthy by 50%.

D. The main factors determine European tourist travel to Bali

Factor analysis ultimately determines that there are three factors as the main attractions for European tourists to visit Bali which can be explained as follows: 1) the first factor is the factor of immigrations, security of destinations, and travel agencies services, with an initial strength of eigenvalues percentage of variance about 38.433%. The first factor consists of facilities and wellness services, immigration services, security destinations, travel agent services quality, and service guides. 2) The second factor is the prices, accommodations, foods and beverages, and transportations, with the initial strength eigenvalues percentage of variance about 13.258%. The second factor is composed of the prices of goods and services, events and festivals, variations tourist attraction, transportations, distance from the country of origin, culinary varieties, and the facilities and hotel services. 3) The third factor is the factor of history, culture, and natural beauty with an initial strength of eigenvalues percentage of variance about 8.147%. The third factor is composed of History of Bali, Balinese Culture and the beauty of the scenery.

E. Predominantly factors determine European tourist travel to Bali

The dominant factors that determine the Europe tourists traveled to Bali can be explained as follows: The first factor is the most decisive European tourists coming to Bali are factors of immigration, security destinations, and travel agencies. The second factor that also determines European tourists traveled to Bali is the prices, accommodations, food and beverage, and transportation. While the last factor that determines the selection of European tourists traveling to Bali is factors of history, culture, and the beauty of the scenery.

V. CONCLUSION AND RECOMMENDATIONS

The three factors as the attraction of tourism Bali from perspective of Europe tourists are (1) the immigrations, security of destinations, and travel agencies, (2) the prices, the accommodations, foods and transports, (3) the history, culture, and natural beauty.

Whatever development strategy in order to increase the number of tourist arrivals from Europe country can be done by improving the quality of immigration services, destinations, improved the security, and improved quality of service travel agencies that focused by Europe tourists. The next strategy is to maintain the stability of prices of goods and services, especially those related to the supply of tourism sectors, maintaining the quality of accommodations, increasing the variety of culinary and arrangement of transportation services, especially related to transportation of tourists.

While the factors of history, culture, and the beauty of the scenery are a factor that needs to be maintained because these factors are the strength point of Bali destinations which is corroborated by the finding of the descriptive analysis of an average of the three variables are in the highest rank by perception of Europe tourists.

The study's findings also indicate that the image of Bali tourism destinations as the destination's history, culture, and nature. These three variables are in accordance with expectations of Europe tourists who have been known as tourists who interest the historical destinations, cultural tourisms, and the beauty of the sceneries. The implications of the research findings to destination promotional strategies is to highlight the power of destination with regard to the special interested in history, culture, and nature.

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Nawa Sanga Conspiracy: Secrets Behind Ancient Balinese Emblem of Unity

An Ethnographic Study

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***Abstract*— The aims of the study were (1) to track the origin of *Nawa Sanga* symbolism in ancient Balinese society, (2) to discover the history behind the usage of *Nawa Sanga* symbolism, and (3) to analyze the actual philosophy of *Nawa Sanga* symbolism to the ancient Balinese. The research design used was descriptive-qualitative with ethnographic method which mainly involved the analysis of cultural aspects in ancient Balinese religious texts and chronicles. Data range involved prominent Balinese ancient religious texts and *babad* (chronicle texts). Data collecting techniques used were document analysis and observation. The result of the study showed that (1) the *Nawa Sanga* symbolism in ancient Balinese society came from the Saivite teachings dating in the same period as Majapahit Empire fell down, (2) the *Nawa Sanga* symbolism was formulated during the Waturenggong period to politically unify the Balinese society, and (3) the actual philosophy behind *Nawa Sanga* symbolism was not religious, but political.**

Keywords—Nawa Sanga, Balinese society, babad.

I. BACKGROUND

As long as Balinese culture is concerned, it still provides vast field of research ranging from its antiquity from the *purwa* 'ancient, earlier' era to its ongoing post-modern date [1]. Since Majapahit Empire fell down in the last quarter of the fifteenth century [2], Bali had become the only neighboring country for the exodus and survival of the ancient Javanese culture from invasion of the new politics and ideology.

Through closer observation, however, Balinese culture apparently has a lot of exceptional features in comparison to Javanese culture from which it derived its basic Hindu philosophy for more than 1500 years [3]. The concept and symbolism of *Dewata Nawa Sanga*, for instance, were practically absent in Javanese earlier literature period up to the fall of Majapahit Empire. Surprisingly, this concept had been highly regarded as a theological apprehension and emblem by the Balinese Hindus [3] began from the early sixteenth century, not long after Javanese domination ended. The absence of this theological thought in Javanese Hindu culture and its gaining majesty in Bali in almost the same era marked a very essential question regarding its true indigenous origin.

Research on the origin of *Dewata Nawa Sanga* concept is another challenging field of study on Balinese culture. This unique theological idea has emerged for at least five centuries in Bali only and still remains almost untouched by scientific methods, though some Balinese modern scholars have managed to conduct studies on it. Starting its milestone from this point, this research had three main goals. First, it aimed to track the origin of *Dewata Nawa Sanga* concept in Bali from the literature basis. Further, this study revealed the reason for the emergence of this concept and emblem in the medieval Balinese Hindu society. At last, this study concluded its analysis on the actual philosophy derived from the *Dewata Nawa Sanga* symbolism.

II. CONCEPTS

A. Nawa Sanga

Etymologically, *Nawa Sanga* comes from two words. The former is a Sanskrit term meaning 'nine' and the latter is its synonym in old Javanese language. However, some scholars tended to assume the later as a different word *sangga*, an old Javanese word synonymous to the verb 'to sustain' or 'to support' in English [4]. The word *dewata* in the beginning of the phrase indicates that of divinity, deities, or worshipable personalities. Thus, *dewata nawa sang(g)a* generally means 'nine sustaining deities'.

This concept of nine protecting gods were firstly found in *Wrihaspati Tattwa* and *Sundarigama*, two prominent medieval Balinese Hindu theological texts of the fifteenth century [5]. Succeeding authors later adopted this concept to subsequent scriptures belonging to the same genre such as the *Bhagawan Garga, Kanda Pat Dewa, Tutur Tapini, Bhuwana Kosa, Siwagama* and so on as well as other genres such as *kidung* and *macapat* hymns which developed in the later century.

The *Dewata Nawa Sanga* has become the basic principle of Balinese Hindu theology at least since the Waturenggong period (1460-1550 AD) [5][6]. Prior to this period, according

to [7] and [3], Balinese literature pre-developed from a linguistically different modes and genres. The *Dewata Nawa Sanga* concept had been widely accepted by the Balinese royal orders and commoners starting from Waturenggong period to the present era. The *Kusuma Dewa* scripture, compiled during Waturenggong period, provided strong evidence of this assumption in relation to the gods' respective temples and their locations. Later, when the kingdom of Bali disintegrated into eight smaller semi-independent territories in the seventeenth century, minor amendments, versions and supplementary texts to the scripture informed slightly different names of temples where the nine gods were resided.

Since then, Balinese Hindu cultural elements rooted their ideas from *Dewata Nawa Sanga* symbolism. The *Kanda Pat Dewa* scripture (which is not elaborately discussed in this research) mentions detailed attributes and paraphernalia of the nine gods. The arrangement is as follows.

Fig. 1. Symbol of *Dewata Nawa Sanga* (image courtesy: Paramita Publisher, Surabaya, 2002).

Direction : *pūrwa* 'east'
Presiding deity : Iśwara
Color : White
Sacred syllable : Sa
Celestial weapon : *wajra* 'bell'

Direction : *agneya* 'south east'
Presiding deity : Mahésora
Color : Pink
Sacred syllable : Na
Celestial weapon : *dhupa* 'incense'

Direction : *dakṣiṇa* 'south'
Presiding deity : Brahmā
Color : Red
Sacred syllable : Ba
Celestial weapon : *gada* 'club'

Direction : *Nériti* 'south west'
Presiding deity : Rudra
Color : Orange
Sacred syllable : Ma
Celestial weapon : *mośala* 'two sided club'

Direction : *paścima* 'west'
Presiding deity : Mahadewa
Color : Yellow
Sacred syllable : Ta
Celestial weapon : *nagapaśa* 'serpent arrow'

Direction : *wayabhya* 'north west'
Presiding deity : Śaṅkara
Color : Green
Sacred syllable : Si
Celestial weapon : *aṅkuśa* 'fiery arrow' (though originally means a stick to control elephant).

Direction : *uttara* 'north'
Presiding deity : Wiṣṇu
Color : Black
Sacred syllable : A
Celestial weapon : *cakra* 'disc'

Direction : *airsanya* 'north east'
Presiding deity : Śambhu
Color : Grey
Sacred syllable : Wa
Celestial weapon : *triśula* 'trident'

Direction : *madhya* 'center'
Presiding deity : Śiwa
Color : combination of white, black, red and yellow.
Sacred syllable : I and Ya
Celestial weapon : *padma* 'lotus'

The nine gods were believed, according to the *Sundarigama* scripture, as manifestation of the Supreme God to protect the universe. The positions of the gods were later put into a symbol known as *padma bhuwana* 'the universal lotus' [see Figure 1] with eight petals representing eight directions and one in the middle as the ninth, where Lord Siva resided. The position of Lord Siwa as the pivot of the lotus suggested that this symbolism derived its basic principles from Sivaism philosophy, the major Hindu sect in Bali since Waturenggong era [8].

B. Balinese Literature

A range of complexity follows definition of Balinese literature. Basically, it is defined as any literary works originating from Bali, ranging from its first known history to the present [9]. However, studies by prominent Dutch archeologists and historians such as [10], [3] and [9] argued

that Balinese indigenous and 'pure' literature did not significantly develop prior to and during Majapahit domination. In the other words, before 1343 A.D. when Majapahit Prime Minister Gajah Mada conquered the last standing *Warmadewa* dynasty in Bali, Balinese literature was not put into prominence. During *Warmadewa* period (circa 810-1343 A.D.), Bali imported notable resources of religious texts from the Javanese authorities. In the twelfth century, Bali's religious conducts were administered from Medang Empire in East Java, ruled by Airlangga, who had a tight family relationship to Balinese royal order. At this time, the order still preserved its original textual language in Sanskrit, although some observable infiltration of old Javanese words were present in some inscriptions and literary works. In the later century, when many more ancient Vedic texts in Sanskrit language were translated and re-compiled into old Javanese language and poetic styles, more old Javanese texts were imported to Bali and became a part of Balinese literature.

Until 1343 A.D., therefore, Balinese literature was defined as being united with ancient Javanese literature due to tight royal relationship. Any literary works in the form of *kakawin* metrical verses and Sanskrit texts (later known as *sruti* texts by modern category) are classified as *sekar agung* 'great (literary) blossom'. This classification is made later in the modern era [7]. Later, when another type of prose developed during late Majapahit era (the fifteenth century, to be more precise) in the form of unmetered free-style proses (as how a novel is written), it is still categorized as *sekar agung*. This type of prose is known as *palawakya*, written mainly in old Javanese language, with some Sanskrit sentences noting the beginning of a new paragraph.

Thus the *sekar agung* type is actually not an original Balinese literary products. After the fall of Majapahit, however, when the *palawakya* free writing style developed separately both in Bali and Java, it is still categorized as *sekar agung* based on the language used. The *kakawin* tradition, in which a piece of writing is strictly limited by amount of syllables and some other metrical rules, is actually an adoption of ancient Vedic meters used in Sanskrit texts.

In the 1400s, two local genres of literature developed in Java: *kidung* and *macapat. Kidung* is a metrical prose written in medieval Javanese language [7]. This genre was also developed in West Jawa, a mysterious but notable fact which needs further notices. The difference in language brings *kidung* into another type of literature called *sekar madhya* 'middle-sized (literary) blossom'. This *kidung* tradition also grew in Bali in the same period, written in medieval Balinese language, a newer dialect version of old Javanese language used by the Balinese in the 1400s to 1600s [11]. Unlike former literary genres, *kidungs* are mostly anonymous. They are chanted in slow and melancholic style up to this era in temple festivals and formal competitions, being an integral part of religious conducts in Bali. All *kidungs* are regarded as sacred and are sung only for religious purposes.

In the seventeenth century, *macapat* style gained popularity as a new literary genre both in Bali and Java. This style had actually been created in Java and brought to Bali in the late 1400s by Dang Hyang Nirartha, a prominent Javanese Hindu priest who came to Bali in 1498, according to some *babad* chronicles. *Macapat* is another metrical poetry, consisting of many types of meters but written and sung in late Balinese and Javanese languages, understandable to modern audience without being translated as the former literature styles were. *Macapat* is categorized as *sekar alit* 'light and small (literary) blossom' in Balinese literary nomenclature. In this period only, since *macapat* metrical poems were written and chanted in late Balinese language, some scholars regard it as semi-indigenous to Bali.

C. Babad chronicle

There are more than fifty major *babad* chronicles being preserved today in Pusat Dokumentasi Provinsi Bali (Bali Documentation Center). The amount could definitely swell if all minor chronicles were compiled from many *geriyas* (Balinese Hindu priest's houses), *puris* (ancient palaces) and more places. *Babads* are proses, written in old Javanese language (with several dialects and code mixings, of course, indicating their origin and date of compilation) containing genealogy of certain remarkable families contributing to the administration of the kingdom in the past [7]. As a source of information about Bali's ancient era, *babads* are considered as one of important historical data sources and records after inscriptions [1].

III. THEORETICAL AND EMPIRICAL REVIEWS

A. Ethnography

Ethnography is described as a detailed description and interpretation of a culture [12]. It has been used as one of five major qualitative traditions namely biography, phenomenology, ground theory, case study and ethnography. This type of research is also known as naturalistic research or qualitative inquiry since it tried to observe detailed phenomenon occurring it its natural condition.

Many scholars have been arguing whether ethnography is a theory or description. A theory is an analysis of facts and their relation to one another. It is also defined as general principles of a body of facts. However, [13] clarifies that ethnography is not merely a description of something, but it is a theory of how a vivid description should be and how it should involve dynamic flow of intellectual process. Etnography, therefore, is included in one of most popular theories as well as method in qualitative research. This theory is applicable in all field of science. For instance, [14] conducted an ethnographic research on ESL, focusing on common writing mistakes made by an ESL student during a semester. An ethnographic research about inbreeding marriage system in Bayung Gede village, district of Kintamani, Bali was conducted as in [15]. He observed carefully on the way marriage process was conducted and the taboos around that particular marriage system.

Since ethnography is related to cultural group, it deals with a vivid description about cultural elements of a particular ethnic group. Seven cultural elements listed by [16] namely language, system of livelihood (economy), system of knowledge, system of technology, social organization, system of religion, and arts. Ethnographic study includes access and

depictions into any of the seven elements, either collaboratively or individually.

B. Theory of Power

As in [17], a propose theory of power in 1959, which was then published in their book a year later, listed five forms of power as follows:

1) Coercive power
The examples of coercive power were well-established in the colonial and imperialism period, where a group of people forced another group of people to follow them and do something with threats. Bullies are real example of this kind of threatening power.

2) Reward power
Someone can gain power if he can give other people something they want. The basic principle of this kind of power is that someone do something for someone else and (s)he gets the reward. This can also be a kind of harm if (s)he cannot fulfill the command.

3) Legitimate power
It is a legal power to control people. A king or a president has a legal power, and so does a manager of a company. This legal power is obtained due to social norms that oblige people to follow. Legitimate power could be a result of a coercive power, for instance when a king conquers a colony, the colony is submissive to him.

4) Referent power
This form of power is also known as the power of charisma. People follow a person due to his/her charisma. Celebrities and social figures have this kind of power of attraction.

5) Expert power
Someone gains power because (s)he knows something that other people do not. His/her knowledge and skills make him/her gain power. The example is a priest or a traditional healer in Bali is regarded powerful because he knows metaphysical things that common people cannot perceive.

Several interesting research have been conducted within the topic of *Dewata Nawa Sanga*. Nitiasih did a comparative study on the meanings of colors in *Dewata Nawa Sanga* symbolism [18]. She utilized Natural Semantic Meta-language and universal meaning to describe Balinese people's conception about colors in *Dewata Nawa Sanga*. Meanwhile, in different discipline, Suastika observed the relation between *Dewata Nawa Sanga* and tourism in Bali [19]. He proposed nine kinds of tourism adopted from the characteristics of each presiding directional gods in the symbol. Recently, Wirakesuma found that each godly characters in *Dewata Nawa Sanga* brings visual expression that can be reinterpreted in Balinese contemporary arts [20]. A lot of online articles and book chapters, mainly in [8], 1974), [3], [1], [7], and [5] discuss about *Dewata Nawa Sanga* as an integral and core segment of Balinese religious system up to this era.

IV. Research Methods

The object of the study was *Dewata Nawa Sanga* concept which now had become the basis of Balinese Hindu religious conducts. To track the origin of this concept, relevant data was firstly collected through observation and literature study. The data was obtained from ten major *babad* chronicles depicting Balinese religious concepts from time to time, began since early Balinese period in the ninth century. Data triangulation was obtained from previous research conducted by previous scholars in this field of study. Some other Balinese religious texts were also studied to confirm the validity of the data.

In order to reveal the actual purpose of the *Dewata Nawa Sanga* concept, further literature study is needed. First, from the development of the *Nawa Sanga* concept from different eras, ranging from its basic notions to the 'revolutionized' style, a parallel line could be traced and matched with Bali's political, religious and social situation in the coresponding eras. The connection was then interpreted based on the theory of power. The analysis in this stage would reveal how *Nawa Sanga* concept is tightly related to the power of the kingdom's authority.

Tracing the meaning or ideology behind the *Nawa Sanga* concept was the ultimate goal of this study. To do so, the symbolism was analyzed based on the historical background in relation to the cultural elements. Textual analysis across time and data resources were used to gain the meaning behind it.

V. Findings

A. Origin of Dewata Nawa Sanga

Careful research on Balinese literature both in the *purwa* 'ancient, earlier' era (prior to 1300 A.D.), medieval era (1300 to 1600 A.D.) and *hanyar* 'late' era (after 1600 A.D.) concerning on the philosophy of *Dewata Nawa Sanga* suggested that this concept was absent in the *purwa* era and suddenly emerged in the medieval era when most *babad* chronicles were composed, particularly during the reign of Waturenggong [10]. This gave clue that *Dewata Nawa Sanga* is not an ancient product of Balinese Hindu teachings since it was conformed in the later period.

The next question drove the analysis on the origin of *Dewata Nawa Sanga* prior to the medieval period. To do this, careful readings and analysis on several major *babad* chronicles could support with strong evidence where the *Dewata Nawa Sanga* was originated from.

Most major *babad* chronicles describe ancient happenings that formulate the beginning of the history in Bali. Uniquely, those chronicles mostly start from the Saka era 0, indicating that it is the event horizon of Balinese history. This account, however, cannot be regarded as scientifically and historically true since most Balinese literary works include many kinds of traditional metaphors, similes and any other types of figurative language in relation to dates, astronomical calculations and social interaction. Those major *babad* chronicles depicting general situation and history of ancient Bali always start from the life of demigods as the ancestors of mankind. Fortunately,

this chronicles of the demigods could help researchers to find the silver line of the connection between the ancient Balinese Hindu theological philosophy and the later period.

There were ten major *babad* chronicles studied for this purpose. These *babad* chronicles were selected carefully based on the scope of the chronology. Those chronicles depicting accounts began from how Bali's primeval past was manifested in the history fell to the first category. Meanwhile, some other *babad* chronicles do not extend their historical range to the beginning of the local genesis. Instead, they commence their plot from a certain event in which their founding genealogical history is firstly brought to importance. These *babab* chronicles are of the second category. The well-known chronicle records *Usana Bali, Usana Bali Pulina* and *Kusuma Dewa* are of the first group and prominently put into main consideration whenever Bali's ancient history is being discussed among historians and traditional interpreters. Other *babad* chronicles belonging to this group are *Babad Pasek, Babad Pasek Kayu Selem, Babad Pasek Sapta Rsi,* and *Babad Bhujangga.* They practically tell the beginning of the genesis of Bali civilization in almost the same way, although there are some insignificant differences in the point of views. Then, there are *Babad Brahmana, Babad Brahmana Siwa, Babad Brahmana Catur,* and *Babad Darmayatra Dang Hyang Nirartha* as samples of the second group. Some of these texts do tell some accounts about the ancient family line of olden Javanese kings (who are considered to be originated from *Jambudwipa,* or India). However, the depiction is relatively short and vague. The second group focused their discourse on the activities and descendants of *brahmana* lineage in Bali beginning from Dang Hyang Nirartha, a Javanese Hindu *brahmana* priest who came to Bali in 1498 to propagate revolution in the Balinese Hindu teachings and society under the patronage of King Waturenggong.

Analysis on both groups of *babad* chronicles show that *dewata nawa sangga* concept emerged in the Waturenggong period, in the beginning of the 16th century. Actualy, this period can be classified as one segment subsidiary to *Dalêm era* [1] when Bali was ruled by a dynasty originated from Dalêm Krêsna Kêpakisan in the 1343 A.D. and all his royal descendants were honored by the title *dalém* 'the deep majesty'. Before Waturenggong period, philosophy of *trimurti* predominated the religious affairs of the Balinese [5]. Seen from *Babad Mpu Kuturan* text, this concept emphasizes on the worship of Hindu trinity, Lord Brahmā, Lord Viṣṇu and Lord Śiva. From the Udayana era, this *trimurti* concept had been widely spread throughout the island via political and cultural vehicles of *trihita karana,* three causes of prosperity. King Udayana, reigned in the 12th century, along with his chief priest, Mpu Kuturan, a Vaisnava priest from East Java, designed major reformation in the cultural and social structure of the Balinese society. Based on the *trimurti* concept, the king instructed every village to establish three main temples namely the *Pura Desa,* or *Pura Balé Agung* (a sanctuary for Lord Brahma), *Pura Pusêr* or *Pusêh* for Lord Viṣṇu, and *Pura Dalêm* for Lord Śiva. This *trimurti* concept is still practiced today by all Balinese traditional *pakraman* villages. Even when *Dewata Nawa Sanga* concept was promoted by Dang Hyang Nirartha four centuries later, the *trimurti* concept is still highly appreciated as the basic foundation of Balinese Hindu religious skeletal pattern.

B. Original Vedic Version of the Nine Gods

Tracing the analysis of *Dewata Nawa Sanga* through the platform of time, it arrived to the original concept of nine gods in the Sanskrit Vedic holy texts, developing in India. While *Dewata Nawa Sanga* puts Lord Śiva in the middle (described in the following section as a sign of Sivaism cult), the original version of the nine gods put Lord Brahma in the middle, surrounded by eight prominent gods and thus known as the *asta dikpalakas* (eight guardian gods of directions).

Direction	: *pūrwa* 'east'
Presiding deity	: Indra, the rain god
Direction	: *agneya* 'south east'
Presiding deity	: Agni, god of fire
Direction	: *dakṣiṇa* 'south'
Presiding deity	: Yama, the superintendent of death
Direction	: *Nériti* 'south west'
Presiding deity	: Niruti, the lord of the ancestors
Direction	: *paścima* 'west'
Presiding deity	: Waruṇa, the deity of water
Direction	: *wayabhya* 'north west'
Presiding deity	: Wāyu, the deity of air
Direction	: *uttara* 'north'
Presiding deity	: Kuwéra, the treasurer of the gods
Direction	: *airsanya* 'north east'
Presiding deity	: Iśana
Direction	: *madhya* 'center'
Presiding deity	: Brahmā, the chief of the demigods

Apparently, *Dewata Nawa Sanga* took basic directional principles on *dikpalaka* concept in the original (and authoritative) concept as per the Vedas, the revealed Holy Scriptures of the Hindus.

C. The First Seven Local Gods

The *Babad Pasek* and *Babad Pasek Sapta Rsi* chronicles contain interesting account about seven gods which can be grouped as 'the first seven gods prior to *Dewata Nawa Sanga'*. It is mentioned in the texts that firstly there was a catastrophe in Bali. The sea was rumbling and the island was unstable due to the absence of central divine pivots. Then, *Bhatara* (god) *Paśupati*, a primordial god, delegated his three divine children to stay in Bali and thus balance the island from disasters. The eldest was known as *Bhatara* (god) *Putrajaya*, resided on Mount Agung. His younger brother, *Bhatara Gênijaya*,

resided on Mount Lempuyang, east Bali. The youngest was a goddess named *Bhatari* (goddess) *Danu*. She chose to stay on Mount Batur. Then, *Bhatara Paśupati* delegated four more gods to become gods of directions. They were *Bhatara Tugu*, resided on Andakasa Hill; *Bhatara Manik Galang*, resided in Pejeng, *Bhatara Tumuwuh* on Mount Watukaru, and *Bhatara Manik Gumawang* on Mount Mangu. Thus they all formed the first seven guardian gods of the Balinese pantheon.

D. Nine Different Sects

In the later centuries, many sects developed in Bali. [10] states nine major sects in Balinese Hindu society from the twelfth to the sixteenth century:

1) *Vaisnava* or Vaisnavism, groups of Visnu worshippers. They are known as the *Hariwangsa* or *Wisnukula* since the Majapahit era.
2) *Śiwa Siddhanta,* Śiwa worshippers.
3) *Ganapatya*, followers of Ganapati, or Ganesha.
4) *Paśupata,* they worship another manifestation of Lord Śiwa.
5) *Buddha (Sogata),* followers of Buddhism.
6) *Tantra Bhairawa.* A tantric follower worships *śakti,* or Durgā, the cosmic energy.
7) *Sakti (Durga),* similar to the *bhairawa.* Śakti followers, however, are known as the white *bhairawa* since they practice austerities and penances, whereas the black *bhairawa* indulge themselves in sensual pleasure.
8) *Brahmana-smarta*, a traditional ritualistic sect.
9) *Surya*, or *saurya*, worshipper of Surya, the sun-god.

These nine sects had different ways of life, rituals and core cults and often caused riots. According to [10] and [21] due to this differentiation in sects and cults, Balinese society was practically divided into social and religious sectors and groups and thus led them to fragile communities in the 13th to the first quarter of 16th century.

E. The Nirartha Revolution

Political chaos in the Majapahit Empire started from 1407 A.D. brought significant decrease on the kingship and society. Due to unstable government and weak policies for a century later, Majapahit fell down from its heydays, invaded by Demak, a newly-growing sultanate in the northern shore of East Java. In 1498, Dang Hyang Nirartha, one of the last priests of the Hindu priesthood order in Java, sailed to Bali in the exodus era when important Javanese Hindu cultural heritage was migrated to Bali due to the chaos [22]. Learning great and painful lesson from the chaotic end of the great kingdom, he tried to save kingdom of Bali from the same terrible fate. His conclusion was, based on the fact, the society must be united to form a strong fortress against the invaders. As a priest, a respected order in the ancient Hindu society, almost at the same position as the king, he managed to commence a revolution in the Balinese society.

Fistly, he came to Gelgel in 1490 and gained sympathy from King Watureggong. The tactic was, when the king instated him as a leading priest of the Balinese royal and common society, he could get the control over the religious affairs in the island.

As a religious society, the ancient Balinese put trust on the authority of the king as *dewaraja* 'godly king', a representative of God on Earth. The king, however, does not have absolute power. Vedic kingly order is supervised by priesthood order, or the *brahminical* order [23]. A priest cannot govern the society directly, but a king can. Thus by synchronized powers between the king (political-administrative power) and the priest (religious power), the society is maintained in justice, religiousness and prosperity.

By administering these dual powers, Dang Hyang Nirartha formulated the concept of *Dewata Nawa Sanga* to embrace all Hindu sects in Bali at that particular time into a single ideology of political-religious oneness.

F. Purposes of Dewata Nawa Sanga

The political and cultural background of the *Dewata Nawa Sanga* emergence clearly shows that the concept was formulated to politically and culturally unite all sects in Bali at that time. In ancient Balinese society, there were two mutual powers to control the society: the political and religious authorities. When the dual powers take control of the society, design and apply policies, the society will follow. If somebody could gain these two positions, then they could gain power and control over the whole society. This fact was realized by Dang Hyang Nirartha, and to unite Balinese society within a strong cultural and religious citadel, he initiated the king and gained position in the kingdom's priesthood order.

The concept of *dewaraja*, regarding a king as a representative of gods, and the *purohita*, the high priest as being regarded as good as god, brought the society into a religiously controlled minds over legitimate power obtained from expertise and charisma of the king and the high priest. Actually, this could have brought peace and ease of control over the people and thus accommodated better management. This situation was deliberately utilized by Dang Hyang Nirartha (who understood the chaotic condition in Java) to protect Balinese society from political, religious and cultural destruction. By utilizing his influence and knowledge as a priest, he gained Waturenggong's affinity and admiration so the king officially instated him to the position of royal high priest and teacher. As he became officially recognized, he formulated an ideology so as to unite all sects in Bali to gain unified power against rapid oversea invasion, both military and cultural.

It is stated in *Babad Wisnu Wangsa* scripture, that formerly Vaisnavism was one of major sects in Bali, and the *bhujangga waisnawa* brahminical clans were instated as high priests from the olden times, even prior to the era of Majapahit conquer over Bali in 1343. Due to emergency political situation that demanded society's unity far more urgent than individual cults among religious sects, the supremacy of Vaisnavism was positioned as linear to other sects by the king. Dang Hyang Nirartha and King Waturenggong, however, realizing the great merit and honor to the Vaisnavism, put Lord Wisnu in the northern side of the *Dewata Nawa Sanga* symbolism (which

actually does not correspond to any Vedic injunctions). When the symbol is put vertically, Lord Visnu is always put in the top of the symbol, heading towards horizontal north, and Lord Brahma is put at the bottom of the symbol, heading to south in horizontal view. Apart from Lord Brahma and Visnu, all other names of the gods are derived from Lord Siva's names, indicating strongly that the symbol is supported by Siwaistic philosophy. The unique presence of Lord Visnu and Brahma (the main deities of Vaisnavism) is a symbol of high respect from the royal authority to the former glory of Vaisnavism in Bali as well as remembrance of Trimurti worship which had formerly been introduced throughout the island.

By putting all the deities in parallel positions and respective temples, all sects in Bali were united in one ideology,—the *Dewata Nawa Sanga* ideology. As Indonesia's *Pancasila* ideology acts as Indonesian people's unification basis from which all national laws and regulations come, all subsidiary religious, cultural and political rules and conducts in the kingdom of Bali emerged from *Dewata Nawa Sanga* emblem. Newly compiled and modified scriptures were introduced to the people at that time, and modified teachings were taught to generations. Therefore, many essential medieval scriptures known to Balinese society today are compiled as if unsystematically arranged, unlike *kakawin* verses and *slokas* (Vedic metrical verses) which were compiled long centuries before. This is a conspiracy, but a very positive one. This conspiracy had been proven extremely effective to protect Bali from outer invasion for about five hundred years.

G. A Strong Religio-Political Conspiracy

The Balinese culture and religion as people can see today is a result of a clever conspiracy of an ancient genius mind. The *Nawa Sanga* conspiracy resulted in a significant change in the society, bringing Balinese society into a new perspective. Even though, based on the analytical study of the scriptures and *babad* chronicles, *Nawa Sanga* is actually a religio-political idea, or a religious concept united to support political affairs, it resulted in amazingly positive effect.

From the form, names and the position of the gods in the emblem, the *Nawa Sanga* concept contains four basic pillars of ideology. First, it is a cultural and political modification of the original Vedic *asta dikpalaka* concept, resulting directional-based lotus pattern. Second, *Nawa Sanga* is a continuation of the previous belief about the nine guardian gods in the preceding era according to *Babad Pasek* and *Babad Pasek Sapta Rsi* chronicles. Third, *Nawa Sanga* concept is imbued with Sivaism concept in which seven of nine names of gods were names of Lord Śiva. This Sivaism concept was dominant in Javanese society in that period, and was later brought to Bali by the priesthood order. Fourth, the two deities, Lord Visnu and Brahma, who are still adopted in the *Nawa Sanga* emblem, were of previous Vaisnavism sect who flourished in Bali prior to Dang Hyang Nirartha and contributed highly to the religious, cultural and social aspects of the Balinese. To honor the greatness of Vaisnavism, Visnu and Brahma are included in the *Nawa Sanga* emblem together with Lord Siva and thus constitutes the three principal *trimurti* gods.

VI. CONCLUSION AND IMPLICATIONS

Nawa sanga is an example of how an ancient society is brought into a unified ideology for a greater importance. The ideology was formulated to anticipate oversea invasion, a major problem at that time. For a society to continue developing, changes and modification are always needed. Otherwise, the society will be vanquished by a stronger one, either culturally or politically. This concept brings about a conclusion that in order to exist, a society must be alert on any threats, be adaptable to changes, and be ready for further innovation.

For about five centuries, Bali has become an island on which Hindu culture and cults from the previous kingdoms developed and survived. *Nawa sanga* is a great political innovation which is based on a strong religious foundation of the Balinese society. Thus, it is a very powerful combination between religion and politics which result in a strong cultural foundation for the society. Until then, people can still adopt many things from Balinese culture and tradition, but still it maintains its pivot in the concept of unity in diversity, the *Nawa Sanga* conspiracy. Departing from this concept, Balinese society should develop and grow further to reply to the challenges of cultural erosion as well as to maintain its cultural and religious uniqueness.

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THE DEVELOPMENT OF PARENTING MODEL AS A LEARNING RESOURCE TO AVOID CHILDREN ABUSE

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***Abstract* – This research is aimed at knowing the acts of parenting, knowing the acts of violence in children and knowing the source of learning that can be developed as a model of parenting to avoid children abuse. The method used in this research was qualitative description and data were collected through observation and interview in the form of discussion. The results of this research found that parenting consists of authoritarian, democratic, authoritative, and neglected. There is no violent action in children in the parenting patterns of authoritative and democratic. Violence occurs in children in the form of physical, psychological and economic violence in parents with authoritarian parenting and psychological and economic abuse in parents with neglected parenting. This is due to heredity and socioeconomic status of parents.**

Keywords: parenting model, learning resources, childrenabuse

I. INTRODUCTION

Nowadays, various mass media in society report the happened of several children abuse. Countries [1] describes the level of child abuse are common in Indonesia, which in 2015 recorded that 21,689,987 cases in 33 provinces in Indonesia. Data obtained from the Center for Data and Information (Pudatin or Pusat Data danInformasi) National Commission for Child Protection (Komnas PA or Komisi Nasional PerlindunganAnak)[2], from January to December 2016, data entered as many as 3739 cases of child rights violations.

Similarly, Komnas PA has received public complaints of approximately 100-200 cases of violations of child rights violations every month. This form of violation of the child rights is not solely on an increasing number of quantity, but the more complex and diverse modes of infringement appear. Rahmayanti[3] explains that the cause of domestic violence, especially violence against children is very complex, including economic factors, education, family social, culture and factors of the child itself. The most dominant factor is the poor family scope.

Violence in children needs to be handled carefully. Parenting patterns, teachers or people in the child's environment plays an important role in optimizing the potential of children, whether physical, cognitive, spiritual, and emotional. Parents, teachers or people in the child's environment should continue to learn from various learning resources to avoid violence in children. Learning resources are all good sources of data, people and certain forms that can be used in learning, both separately and combined to facilitate in achieving learning objectives.[4]

Regarding to the above problems, this study was developing parenting model to avoid acts of violence in children through various sources of learning. Specifically, this study was focused on knowing the acts of parenting, the acts of violence in children and the sources of learning that can be developed as a model of parenting to avoid acts of children abuse.

II. THE NOTION OF PARENTING

Parenting can be interpreted as a total interaction process between parents and children covering the process of maintenance (feeding, cleaning, and sheltering) and the process of socialization (teaching the common behavior and in accordance with the rules in society). This process involves also how caregivers (parents) communicate affection, values, interests, behaviors and beliefs to their children[5]. Parenting is a consistent parent effort and persistent system in guarding and guiding the child from birth to adulthood[6]. Parenting type consists of: 1. authoritarian parenting style; 2. permissive parenting; 3. democracyparenting[7]. Some types of parenting, namely: 1. Uninvolved parenting; 2. Indulgent parenting; 3. Authoritative; and 4. Authoritarian.[5]

Based on the above opinion, it can be seen that parenting consists of: 1. Democratic parenting, the parenting pattern that prioritizes the interests of children, and not hesitate to control the child. 2. Authoritarian parenting, that is, tend to set the standard that must be obedient child, it is usually accompanied by threats. 3. Authoritative parenting patterns, i.e. parents tend to show a high degree of control and warmth to the child. 4. Parenting patterns of abandonment are the type of parental parenting that provides very loose supervision, giving the child an opportunity to do something without supervision from him, giving the time and the very minimal cost to his children, when they are widely used for personal use.

III. CHILDREN ABUSE

Childen abuse or violence against children can be distinguished: (a). Physical violence, categorized as violence of this type are: slapping, kicking, punching, choking, pushing, biting, banging, threatening with sharp objects and so on;(b). Psychic violence. This kind of violence is not so easy to recognize. The concrete form of violence or violation of this type is: the use of harsh words, misuse of trust, treating people in front of others or in public, throwing threats with words and so on;(c). Sexual violence, included in this category are any actions that appear in the form of coercion or threaten to have sexual intercourse, torture or acts sadistically and leave a person including those classified as children after sexual intercourse;(d). Economic violence, by children, this type of

violence often occurs when parents force children to be able to contribute to the family economy, so the phenomenon of newspaper sellers, street singers, beggars, and others increasingly spread especially in urban areas.[8].

IV. LEARNING RESOURCES

Learning resources as all sources that might be used by students to occur learning behavior[9]. There are two types of learning resources: (a). Designed learning resources (learning resources by design); (b). Learning resources by utilization[4]. Based on the type of learning resources, it is known that the types of learning resources that can be used in the learning process are:

A. Messages or materials, both formal and nonformal.

B. Persons, namely: (1). Groups of people who are specially designated as the main learning resources that are trained professionally to become teachers, such as teachers, counselors, instructors, and lecturer, principals, labors, librarians and others; (2). Group of people who have professions.

C Material and application program, is a format usually used as a support program in storing learning messages such as peket books, textbooks, handbooks, modules, video programs, audio, film, OHT (Over Head Transparancy), slide programs, Props and so on. The program here is meant to be various software.

D. Tools. The tools referred to here are physical objects often referred to as hardware which serves as a means or tool to present the materials in point 3 above, for example, multimedia, projector, slide projector, OHP, Film, tape recorder, hardware, computer, radio, television, VCD/DVD, camera, whiteboard, generator, engine, car, motor, electric appliance and so on.

E. Method, is a way or steps used by teacher in delivering learning materials to achieve learning objectives.

F. Background, is the situation and environment of the learning environment both inside and outside the school, whether designed or designed not by design, but can be used by the teacher in learning (by utilization).

II. RESEARCH METHOD

The research was conducted at the State Elementary School 03 Mampang, Pancoran Mas, Depok. The respondents were parents and students of class IIIA/IIIB. The research period is April-June 2017. The research method used is qualitative descriptive. Qualitative research is aimed at understanding social phenomena from the point of view of participants. Data collection is done by natural setting (natural condition), from primary data source [11]. Technique of collecting observation data of daily life of student in school, filling instrument and interview in form of group discussion.

Parents and students fill out the instruments and answer the interviews in the relaxed and intimate group discussion nuance combined with 2D/3D animated VCD playback on parenting and child abuse patterns originating from various sources. Implementation of research for parents and students is done on different days, dates, and hours. The results from each parents and students are cross-checked to find out if the parent's answer corresponds to the student's answer and vice versa.

III. RESULTS AND DISCUSSIONS

Based on the results of the study, it is known that 18 out of 40 parents or 45% of parents are included in the category of democratic parenting. This is known from the respondent's answer, including: (a) parents prioritize the interests of children and do not hesitate to control the child; (b) parents are rational, always underlying their actions on the ratio; (c) parents are realistic about children's abilities, not expecting too much beyond the children's abilities [4], in which parents give children the opportunity to be independent and develop internal controls; (d) parents recognize the person as a person and participate in decision making; (e) all children have the same opinions and rights; (f) the child can do various things according to his ability and all the consequences caused to be the responsibility of each child. Through these results, it showed that no child abuse was occured.

In authoritatrian parenting pattern, the results of the study showed that 4 of 40 parents or 10% of parents enter the category of authoritarian parenting. This is known from the respondent's answer, including (a) parents set an absolute standard that must be obedient child, in which the absolute standard is in accordance with the rules, norms or rules applicable; (b) The child must follow all the wishes of the parents; (c) children may participate in various extracurricular activities in accordance with the wishes of parents; (d) children should not learn and play with strange people. These results proved that there were physical, psychological, and economic abuses in children.

This study also showed that 16 of 40 parents or 40% of parents enter the students in the category of authoritative parenting. This is known from the respondent's answer, including (a) children are given the freedom to do various activities under the monitoring of parents; (b) children may participate in various extracurricular activities according to his or her wish and the consent of the parent; (c) children are free to learn and play with anyone who is known to parents. These results confirmed that there was no occurance of child abuse.

Based on the results of the research, it could be seen that 2 of 40 parents or 5% of parents entered the category of parenting neglect. This is known from the respondents' answers, involving: (a) psychologically, parents are not close to the child; (b) parents never care about children's learning outcomes; (c) parents do not give children time to learn and play according to their age; (d) parents never know the child's problems and wants. These results lead to the conclusion that there was physical, psychological, and economic abuse in children.

In the democratic parenting pattern, there was no violence occurred. It showed by the situations where the

children feel valued by parents, good children learning outcomes; children are more independent, children can control themselves, have a good relationship with their friends and are able to deal with stress or problems; and children have an interest in things and cooperative spirit against others. Therefore, authoritarian parenting patterns of middle-upper parents' socioeconomic status showed that there was phychic violence among children. The parents scold and yell at the children with polite words so the child understands what they mean. For authoritarian parental parenting with a background of low socioeconomic status, the acts of child abuse covering psychic, physical, and economic. In addition to scolding, yelling at children with rude words, parents force children to help their work, such as selling. They make a rule that children after school should be able to help parents complete their work in selling, doing housework or keeping their younger siblings. Children in everyday life are just told and must be willing to follow the orders/wishes of parents. The childrens were lack of learning and playing opportunities. The negative effects of authoritarian parenting patterns resulted that in the characteristics of the child who will act and behave as expected as their parents; the child is often told by his friends, becoming fearful, silent, closed, uninitiative, uncaring and violate the norms, yet immediately afraid or choosing to be silent when the opponent speech argued.

In the authoritative parenting pattern, against a background of hereditary factors and good socioeconomic status, parents support all activities of the children, show great supervision and warmth to the child. In this parenting pattern, there was no child abuse occurs since interpersonal communication is established between parents, teachers and children. Authoritative parenting parenting produces bright, fun, creative, intelligent, self-confident, open-minded parents, teachers and friends, so the children were not easily stressed, not easily depressed and perform well. Parenting patterns of neglected parents. Parents of neglect with hereditary factors, low socioeconomic and environmental status resulted a poor parenting. There was physical, psychological and economic violence. Parents like to yell and scold children with words that are not polite. To meet the needs of the school and the necessities of family life, parents send children to sell and be street singers. Parenting patterns of neglected parents produce a child with unstable behavior, sometimes more aggressive, sometimes impulsive, moody and lack of concentration on an activity, even can occur deviations of personality and anti-social behavior in children. In life at school, children tend to play alone, children are less social with their friends, achievement and learning outcomes of unstable children, even the value tends to equal the average grade.

Children feel separated in family life, children never get attention from parents, children find it difficult to answer homework while studying at home, children feel only occasionally can eat and fed their mother when hungry, children never hugged warm during sleep, never given a pocket money, never bought the needs of the school and the necessities of life according to his age, during school holidays the child was never invited to walk by the parents.

Based on the results of the study, it can be seen that *first*, the source of learning used as a model of parental care in an effort to avoid violence in children is in the form of:1. Messages or materials, both formal and nonformal. Formal messages are messages and information provided by the teacher in the learning process situation. The nonformal message is a message that can be used as a source or learning material, ie a poster message that can be attached to the classroom wall of the school. This poster contains informative and educative material about family life which is harmonious and in accordance with religious shari'a, *second*, in general, people as the primary learning source are professionally trained to become teachers, in this case are the principal and classroom teachers and teachers of Guidance and Counseling, third, the tools in question here are physical objects often referred to as hardware (hardware) that serves as a means or tool to present the material in items a and b above. In this case the researcher uses 2 dimensionVCD Animation that contains parenting material and violence act on child.

IV. CONCLUSION

Based on the results of school observations, information from classroom teachers, as well as interviews and filling instruments that researchers do to parents and students, it could be councluded that (1) the acts of parenting consist of authoritarian, democratic, authoritative, and neglectful, (2) there is no violence in children on the parenting style of democratic and authoritative, but the violence in children in the form of physical, psychological, and economic violence occurs in parents with authoritarian parenting 10% or 4 people and 5% or 2 person neglect caregiving and (3) learning resources that can be used in developing parenting patterns to avoid violence against children are in the form of messages, people, and tools.

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Rare Plant Preservation through Village Forest Policy in Bali

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***Abstract* — Traditional villages in Bali has its authorities to rule the village, including how to manage the village forest. While the aim of the management of the village forest has been mainly for ceremonial requirements, it has contributed to the preservation of several rare plants in Bali. The present study aimed at mapping rare plant species distribution in the village forest of Penglipuran Village, Bangli, Bali and how the management of the village forest affects the distribution of rare plants in the village forest. The study revealed that there were 21 families with 34 species of plants in the village forest, with 17 of the species that are categorized as rare plants distributed in narrow, medium and wide in the forest area in clump distribution pattern. It was also revealed that some of the rare plants were preserved because of their roles in the traditional and religious ceremony.**

Keywords—Mapping, Rare Plants, Village Forest, Penglipuran Village

I. INTRODUCTION

Based on the 2010 Bali Forestry Departement data, Bali's land forest area is 127,721.01 hectare or only 22.59 percentof Bali island total area which is 563,286 hectare. In addition to natural disasters of droughts, floods and landslides, forest destruction due to human intervention, will also cause the extinction of plant species, including the local plants which have important meaning and significance for the local community, for the education and research, as well as for the national and worldwide interests as the sources of germplasm.

Some studies, such as studies done by [1][2][3][4][5][6][7][8][9][10][11][12] respectively in the buffer forests of Lake Batur (Bangli) Buyan Lake (Buleleng), Tenganan Pegringsingan Village (Karangasem), village forests of Penglipuran (Bangli), Tigawasa Village and Cempaga Village (Buleleng), and the vegetation of Lovina beach (Buleleng), indicate that species diversity at those study sites generally showed a low to moderate species diversity index and none of those studies showed high diversity index. This means that there are some certain species that can be categorized as rare plants in terms of limited density, endemic distribution and low frequency. Studies of terrestrial vegetation outside Bali done by [13][14][15][16][17][18][19][20] examined the species composition, species diversity and formal legal forest management. In general, the result of those studies was the composition of plants in each study site, in which those species composition were arranged in form of floristic list. From the studies mentioned above, there was no in depth study of rare plant species and the spreading map of those rare species that survive in their original environment, in this case the rare plant species in the village forest of Penglipuran, Bangli, Bali. Meanwhile, rare plant species that still survive in the site are hardly found, their distribution spots are unknown, and so are their distribution patterns.

In a biology field study, it is very essential to know the name of the organism especially the name of the plants growing in the area of the study. In the meantime, biological field study meets a lot of obstacles in the identification of organism names. The results of this study could be used as a learning media in identifying the scientific name of a plant and its existence in the natural environment.

Based on the above description, depth study of rare plant species distribution map and the patterns in the site is done in this research. This study did not impact locally, but also regionally, nationally and even globally, such as in reducing global warming, climate changes, and in increasing green ecology, green economic as well as saving germplasm. In the future this study is able to bring the rare plant species destination in their natural site. The objects of this research are to produce a map of rare plant species distribution the village forest of Penglipuran, Bangli, Bali; to acknowledge the distribution pattern of those rare plant species; and the implication as a learning media.

II. METHOD

A. Research Population and Sampling

This research population included mapping area and rare plant species. The research samples were the mapping areas taken from all forest border and the rare plant species were rare plants covered in the square. Simple measurement technique was used as the mapping technique [21]. The sampling technique for rare plant species was systematic sampling.

B. Rare Plant Species Distribution Mapping

This research used mapping methods of simple measurement refers to [21] on simple mapping map and boundary note. Simple mapping steps are described as follows:

1. Conduct temporary pointing by determining benchmark points.

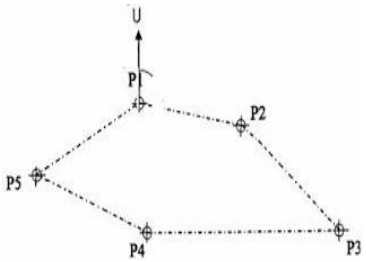

Fig. 1. Benchmark Points

2. Conduct a distance measurement directly through the distance between the wooden stakes using a long gauge equipped with lines and number of meters. The gauge is placed horizontally when measuring the distance so that it is measured precisely.
3. Conduct a ground surface level differences calculation with a heeling on each wooden stakes distances.
4. Perform a simple definitive measurement with sliding system compass polygon method refers to [22].
   a. Conduct an angle measurement or azimuth on each wooden stakes placed at the location points to form a closed polygon.
   b. Calculate the coordinates of compass polygon point by knowing the starting and ending point coordinates, and then determine the geographic azimuth.

   Study site can be seen on Figure 2.

Fig.2. Penglipuran Village Forest Area.
(Source: Google Earth, 2017)

C. Rare Plant Species Distribution Area

Plot (quadratic) positioning on the forest area with the size of 20 x 20 meters at the transect line which were placed alternately and continuously on left and right of 100 squares. Between one square to another was given 10 meter distance. Then, notes and documentations from the observation were taken.

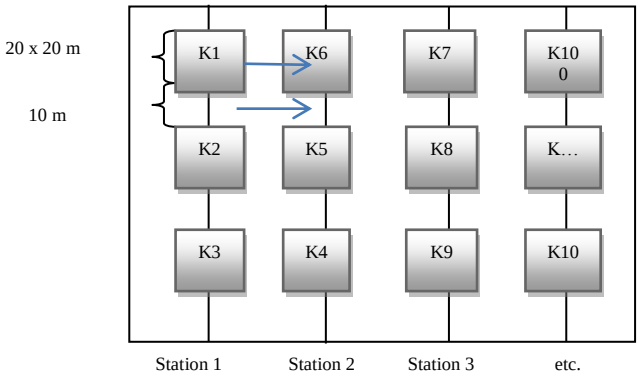

Fig.3. Layout of Quadratic Positioning

Observation results are loaded up to the work table below.

TABLE 1. OBSERVATION RESULTS OF DISTRIBUTION PATTERN SPECIES… IN…

No. Plot	Coordinate (X,Y)	Number of Individuals	No. Plot	Coordinate (X,Y)	Number of Individual
1			90		
2			...		
3			100		

TABLE 2. SPECIES DISTRIBUTION DENSITY RECAP

Number of Individuals	0	1	2	3	4	5	Total
Number of Plots	.....	.....	.....	.....	.....	.....	100

D. Data Analysis Techniques

1. Data analysis on distribution map of rare plant species was done descriptively.
2. Data analysis on distribution pattern of rare plant species was done using Poison ecology statistic by the formula: [23][24][25][10].

$$X^2 = \frac{(Observed - Expected)2}{Expected} \quad (1)$$

If the X^2 value > X^2 table, then the plant species are non-randomly distributed. If X^2 value < X^2 table, then the plant species are randomly distributed. Furthermore, if the plant species are non-randomly distributed, then continue to the variance test. If the variance test result is $v/x \geq 1$ then the plant species distributed in clump/group, and if it shows $v/x < 1$ then the plant species regularly distributed.

III. Research Results and Discussion

A. Research Results

1. Data analysis on distribution map of rare plant species was done descriptively.
   The rare plant species composition in the village forest of Penglipuran, Bangli, Bali, presented in Table 3.

TABLE 3. GENERAL FLORISTIC PLANT LISTS IN THE VILLAGE FOREST OF PENGLIPURAN, BANGLI, BALI

No	Family	Plant Species Name		Total	Density	Relative Density
		Local/ Indonesian Name	Scientific Name			
1	Zingiberaceae	Ilak	*Amomum*sp	3	0,00032967	0,89
2	Sapotaceae	Bala	*Mimusops*sp	11	0,001208791	3,26
		Balabuah	*Mimusopselengi*	16	0,001758242	4,75
		Nyaman	*Manilkara*sp	5	0,000549451	1,48
3	Dipterocarpaceae	Balau	*Hopeacelebica*	1	0,00010989	0,30
4	Magnoliaceae	Base-base	*Elmerilliaovalis*	28	0,003076923	7,73
		Cempaka	*Michelia alba*	4	0,00043956	1,19
5	Anacardiaceae	Bejaran	*Lanneacoromandelica*	5	0,000549451	1,48
		Book	*Dracontomelon*sp	4	0,00043956	1,19
6	Rutaceae	Bila	*Aeglemarmelos*	18	0,001978022	4,97
7	Annonaceae	Blekatak	*Polyalthialateriflora*	11	0,001208791	3,26
8	Fagaceae	Bleket	*Lithocarpuscelebicus*	2	0,00021978	0,59
9	Euphorbiaceae	Boni	*Antidesmabonius*	2	0,00021978	0,59
10	Myrtaceae	Daunsalam	*Syzygiumpolyanthum*	8	0,000879121	2,37
		Juwetbatu	*Syzygiumcumini*	9	0,000989011	2,67
11	Elaeocarpaceae	Genitri	*Elaeocarpusganitrus*	5	0,000549451	1,48
12	Meliaceae	Langsat	*Lansium*sp	39	0,004285714	11,57
		Majegau	*Dysoxylumdensiflorum*	2	0,00021978	0,59
		Gau-gau	*Dysoxylum*sp	137	0,015054945	37,85
13	Oxalidaceae	Kacret	*Sarcothecacelebica*	1	0,00010989	0,30
14	Myristicaceae	Kayujelema	*Knemalaurina*	1	0,00010989	0,30
		Pala jiwa	*Myristica*sp	9	0,000989011	2,67
15	Ulmaceae	Kenongnang	*Gironnierasubaequalis*	9	0,000989011	2,67
16	Phyllanthaceae	Kepundung	*Baccaurearacemosa*	1	0,00010989	0,30
17	Moraceae	Mabi	*Ficusrasemosa*	1	0,00010989	0,30
		Nangka	*Artocarpusheterophyllus*	5	0,000549451	1,48
		Nangka-nangka	*Artocarpus*sp	1	0,00010989	0,30
		Tehep	*Artocarpuselastica*	3	0,00032967	0,89
		Beringin	*Ficusbenjamina*	1	0,00010989	0,30
18	Gnetaceae	Melinjo	*Gnetumgnemon*	6	0,000659341	1,78
19	Clusiaceae	Mundeh	*Garciniadulcis*	2	0,00021978	0,59
		Pradah	*Garciniacerlebica*	1	0,00010989	0,30
20	Sterculiaceae	Pongpongan	*Heritieralittoralis*	3	0,00032967	0,89
21	Leguminosae	Telan	*Cynometraramiflora*	8	0,000879121	2,37
		Total		362	0,03978022	100,00

There were 34 plant species found in the village forest of Penglipuran which were categorized into 21 families, they were: 3 species of Meliaceae with the highest number of individual species as many as 178 individual species, meanwhile plants from Dipterocarpaceae, Oxalidaceae, Phyllanthaceae had the lowest species number which was 1 species with 1 individual species each. Fagaceae (2 individual species), Euphorbiaceae (2 individual species), Zingiberaceae (3 individual species), Sterculiaceae (3 individual species), Clusiaceae (3 individual species), Elaeocarpaceae (5 individual species), Gnetaceae (6 individual species), Leguminosae (8 individual species), Anacardiaceae (9 individual species), Ulmaceae (9 individual species), Myristicaceae (10 individual species), Annonaceae (11 individual species), Moraceae (11 individual species), Myrtaceae (17 individual species), Rutaceae (18 individual species), Sapotaceae (32 individual species), and Magnoliaceae (32 individual species).

From the Table 4 above, then the plant species were identified to categorize them as rare category. The identification results are shown in Table 4.

TABLE 4. THE LISTS OF RARE PLANT SPECIES IN THE VILLAGE FOREST OF PENGLIPURAN

No	Family	Plant Species Name		Status of Rarity
		Local/Indonesian Name	Scientific Name	
1	Magnoliaceae	Base-base	*Elmerilliaovalis*	L.Kab
		Cempaka	*Michelia alba*	L.Kab
2	Anacardiaceae	Bejaran	*Lanneacoromandelica*	L.Kab
3	Rutaceae	Bila	*Aeglemarmelos*	LB
4	Euphorbiaceae	Boni	*Antidesmabonius*	LB
5	Elaeocarpaceae	Genitri	*Elaeocarpusganitrus*	L.Kab
6	Myrtaceae	Juwetbatu	*Syzygiumcumini*	LB
7	Myristicaceae	Kayujelema	*Knemalaurina*	L.Kab
		Pala jiwa	*Myristica*sp	LN
8	Phyllanthaceae	Kepundung	*Baccaurearacemosa*	L.Kab
9	Moraceae	Mabi	*Ficusrasemosa*	L.Kab
		Nangka-nangka	*Artocarpus*sp	LB
		Beringin	*Ficusbenjamina*	L.Kab
10	Meliaceae	Majegau	*Dysoxylumdensiflorum*	LB
11	Clusiaceae	Mundeh	*Garciniadulcis*	LB
12	Sapotaceae	Nyaman	*Manilkara*sp	LB
13	Clusiaceae	Peredah	*Garciniacerlebica*	L.Kab

Information:
LB: Bali-level Rarity
L.Kab: District of Bangli-level Rarity
LN: National-level Rarity
*): Local Names using Balinese language

From those 34 species in Village Forest of Penglipuran, 17 of them or 50% of them were categorized as rare plants. The category identification the plant species was based on the interview with the local community, the forestry services, and various study references. Based on the status of rarity, it can be divided into District-level rarity, Province of Bali-level rarity, and National-level rarity.

2. The Mapping of Rare Plants Species

The mapping results of rare plants species in village forest of Penglipuran showed in Figure 4. From the Figure 4 shows that there were 17 distributions of rare plants species found in the area of Penglipuran Village. The rare plant species on the distribution map were distinguished by color for each species. The purpose of this color distinction was to make it easier to see the distribution on the map. Based on the 17 rare plant species distributions, it was known that *base-base* species (*Elmerilliaovalis*) had the widest distribution of 40%, then *bila* (*Aeglemarmelos*) of 30%, *juwetbatu* (*Syzygiumcumini*) and *palajiwa* (*Myristica*sp) (20%), *Bejaran* (*Lanneacoromandelica*), *Cempaka* (*Michelia alba*), *Genitri* (*Elaeocarpusganitrus*), *Nyaman* (*Manilkara*sp) (10%). Furthermore, *Boni* (*Antidesmabonius*), *Kayujelema* (*Knemalaurina*), *Kepundung* (*Baccaurearacemosa*), *Mabi* (*Ficusrasemosa*), *Majegau* (*Dysoxylumdensiflorum*), *Mundeh* (*Garciniadulcis*), *Nangka-nangka* (*Artocarpus*sp), *Pradah* (*Garciniacerlebica*), *Beringin* (Moraceae) had 5% distribution.

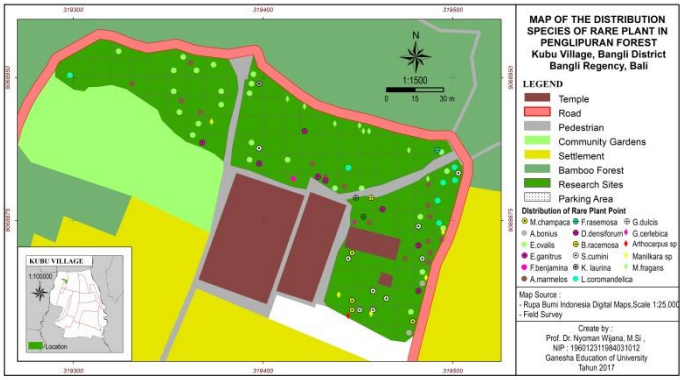

Fig.4. The Mapping of Rare Plant Species Distrbution in The Village Forest of Penglipuran, Bangli, Bali

3. The Distribution Pattern of Rare Plant Species

The analysis results on the distribution pattern of rare plant species in the village forest of Penglipuran are shown in Table 5.

TABLE 5. THE DISTRIBUTION PATTERNS OF RARE PLANT SPECIES IN THE VILLAGE FOREST OF PENGLIPURAN, BANGLI.

No	Rare Plant Name	Type of Distribution Pattern
1	Bila *(Aeglemarmelos*)	Clump/Group
2	Base-Base (*Elmerilliaovalis*)	Clump/Group
3	Bejaran (*Lannea coromandelica)*	Clump/Group
4	Juwet Batu (*Syzygium cumini*)	Clump/Group
5	Boni*(Antidesma bonius)*	Clump/Group
6	Cempaka (*Michelia alba)*	Clump/Group
7	Gentri (*Elaeocarpus ganitrus)*	Clump/Group
8	Kayu Jelama (*Knema laurina)*	Clump/Group
9	Kepundung (*Baccaurea racemosa*)	Clump/Group
10	Mabi (*Ficus rasemosa)*	Clump/Group
11	Majegau (*Dysoxylum densiflorum*)	Clump/Group
12	Mundeh (*Garcinia dulcis*)	Clump/Group
13	Nyaman (*Manilkara sp.)*	Clump/Group
14	Palajiwa (*Myristica fragans)*	Clump/Group
15	Nangka-nangka (*Artocarpus sp.*)	Clump/Group
16	Predah (*Garcinia cerlebica)*	Clump/Group
17	Beringin (*Ficusbenjamina.*)	Clump/Group

Based on the Table 5 above, it can be seen that the distribution pattern type of rare plant species in the village forest of Penglipuran, Bangli was group/clump distribution type.

3.1.4 The Implication as a Biology Learning Media

In an experiment on rare plant field identification, involving a class of students of Biology Department, Faculty of Math and Science, Universitas Pendidikan Ganesha, Singaraja-Bali, with total of 24 students, it showed that there were 15 rare plants (89%) out of 17 rare plants in their natural environment had been known by the students, whereas two species of those rare plants (11%) could not be identified by the students.

B. Discussion

17 species (50%) out of 34 plant species found in the village forest of Penglipuran were categorized as rare plant species. The factors of those species rarity were: (1) The plants which were categorized as rare were considered as "sacred wood" by the community, which were mostly used for holy buildings (Hindu's prayer places in Bali) or for religious ceremony purposes (Hindu), re-cultivating and replanting were not undertaken by the community to replace the plants that had been cut down; (2) The rare plants reproduced so slowly that the community were not interested to cultivate them. Therefore, the rare plants only reproduced and survived naturally; (3) The interview with the village chief revealed that there had been an effort to cultivate the rare plants both by the forest management and the community. However, this effort was not completed with plant care treatment which caused discontinuance of the effort; (4) The interview results also revealed that the community had a concept called "*Hutan Due*", which made the people scared to get into the forest to do rare plants conservation. This "*Hutan Due*" concept meant that the community considered the forest as a sacred place. (5) There is also a belief that the forest products can be used for *yadnya* purpose only on ceremonies held in the village temples. If any person takes forest products for personal use, without having permission from the village authorities, charges can be pressed against that person in accordance with *awig-awig* or the village's traditional house rules [12].

The distribution of rare plant species is influenced by two main factors, they are the environment (external) and the plants ability to reproduce (internal). As stated by [26] that the limit of plants distribution is influenced by external factor, which is the habitat of the plant environment and internal factor, which is the reproduction ability. Based on the data, the distribution of rare plant species in the village forest of Penglipuran is divided into 4 factors, namely environmental climate factor (climatic), environmental edification, environmental biotic factor, and human intervention factor. The rare plant species in the village forest of Penglipuran are categorized as seed plants (*spermatophyta*), especially closed seed plants (*angiospermae*). Rare plant species multiply themselves naturally or generatively using their seeds. Their seeds are carried away by the wind or by the animals so that they have wide distribution area, not only near the area of the source plant. Moreover, the period of their flower blooming and fruit bearing is relatively long, therefore their reproduction ability is very rapid. Meanwhile, the other plant species which distribution area is narrow or only on particular areas are mostly plant species that has shorter flowering and fruiting period so that their ability to multiply or to grow is very slow.

The group type of distribution pattern is caused by the plants' seed reproduction method. Therefore, the seeds grow next to the source plant and this situation continues constantly and causes those rare plant species have a distribution pattern in group type. This is in accordance with a theory proposed by [10] about the supporting factors of group type distribution pattern, which is explained as follows. Seeds or fruits from plants that produce seeds tend to fall near the source plant. And then, due to the micro-reasons, the habitat is homogenous at macro level environment, however on lesser level the habitat consists of many different macrocytes that allow placement and stabilization of a species with different success rates. The most suitable macrocytes to a species tends to be denser occupied with the same species.

The implication of this study results in terms of biology field study indicated that there was 15 rare plant species (89%) which could be identified and 2 rare plant species (11%) unidentified. This was due to the limitations of GPS used by the students so that the students could not identify the location of the rare plant species they looked for; the plant images used to identify the rare plant species were imperfect or bad, they required improvement; and the rare plant species descriptions used by the students to look for the plants in the field, were incomplete and required further improvement.

IV. CONCLUSIONS AND RECOMMENDATIONS

Thus, it can be concluded that plant species composition in the village forest of Penglipuran consisted of 21 families with 34 species; 17 out of 34 species were categorized as rare

plants; the mapping results showed that the distribution of rare plant species were narrow, medium, and wide distribution in the forest area; and the distribution pattern was categorized as group distribution pattern. Here are some recommendations submitted, including, *first*, the forest management based on the local wisdom is important to be maintained so that the plant species do not become extinct; *second*, by the mapping of rare plant species in the village forest of Penglipuran, it can be developed as a new destination to introduce rare plant species in their original nature.

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The Adaptive eLearning System Design

Student Learning Style Trend Analysis

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***Abstract* — This study aimed to analyze the trend of student learning styles that are used as a basis for designing an adaptive eLearning system, as one of the solutions to improve the quality of learning. In the long run, adaptive eLearning system is expected to overcome the problems in conventional eLearning, which assumes all users' characteristics are homogeneous. In the realization of this system required several stages namely (i) analysis, (ii) design, (iii) development, (iv) implementation and (v) evaluation. In addition, at this stage the preparation of learning materials will be incorporated into adaptive eLearning. Results at this stage is identified, analyzed, and designed as a system for the trend of student learning styles through questionnaires. The score of the questionnaire results will be used as a basis for providing different materials according to the students learning style i.e. visual, audio, and kinesthetic (VAK).**

Keywords— adaptive elearning system, student learning style, trend analysis, questionnaire.

I. INTRODUCTION

eLearning trend is now growing rapidly and has managed to steal the attention of many parties both in education and industry. The benefits of eLearning have also been felt in the education world in Indonesia, as support of the implementation of the 2013 curriculum that requires students to always participate actively in learning. This is in accordance with the nature of eLearning that is individual learning and habit to learn, where the most important role lies in the students. The main aspect into consideration in the design of learning and eLearning development is student behavior[1]. It provides assurance that eLearning can provide a maximum learning experience for students, improve student retention ensure that each related component supports the achievement of learning objectives and matches the characteristics of the student.

However, the existing eLearning has not fully implemented the eLearning system as a model of Learning Management System (LMS). E-learning is applied still in the narrow sense that is only using information and communication technology, especially the Internet, Such as e-mail communication, learning through blogs, and other Internet-based applications. All learning resources are not well managed so that sometimes at risk of lost in space in learning the material and still oriented class. Besides, eLearning is also less focused on the characteristics of students. The role of eLearning still only prioritizes the content delivery of learning by assuming all users are equal, regardless of cognitive aspect (knowledge ability), motivation gained from the individual learning experience and learning style. In most eLearning systems (conventional), presented only suitable materials for homogeneous students, very ready and motivated, but when the system is presented to diverse students it will be a problem. As stated by[2] that e-Learning mostly provide web-based learning in order to make students can access the same courses through internet easily. In an e-Learning system, one course will not suitable for all users' ability. The content that is shown for certain group students will not be suitable for other students because each student has different learning motivation, knowledge level, learning style, and competence. Thus, the existing eLearning cannot guarantee the transformation of learning or the smooth implementation of the learning itself, and the effectiveness of learning will not run optimally

The presence of learning system that is expected to increase the intensity of self-learning cannot yet show its important role. For that, we need a dynamic eLearning system based on model characteristics of students in accordance with the scientific field. In this paper, we will discuss the trend analysis of student learning styles that are used as a basis for designing the adaptive eLearning (AdeLe) system as one of the solutions to make the learning process more optimal and meaningful.

Adaptive eLearning or often referred to as personalization learning into a solution that is right against the limitations of learning that exist today. Adaptive eLearning is a new approach that will become trends and fashion as an innovative eLearning method in the years to come, as revealed by[3] that "Adaptive e-Learning is a new approach that can make an e-Learning system More effective by adapting the presentation

of information and overall linkage structure to individual users in accordance with their knowledge and behavior ".

Some studies mention that the characteristic factors that influence students' success are learning style, motivation and knowledge ability[1][2][4][5]. These three characteristic factors (Triple-characteristic models/TCM) are inherent structures that can improve learning and outcomes in individual learning [4]. Therefore, an e-Learning system will be built that can encourage students to play an active role, emphasizing on personalization that includes adaptability (adaptive) oriented to learning styles, motivation and student ability level. This system can detect the characteristics and needs of individual students. The system has an algorithm that can determine the type of learning materials that can be in accordance with the Triple-characteristic Model (TCM) of the students and is also equipped with a scoring system. This system is expected to make learning becomes meaningful and fun for students so that the learning objectives become more optimal. This is in line with[6] that the use of technology in education has promising potential in the internalization process.

A. The Adaptive eLearning (AdeLe) System

The Adaptive eLearning system will address the issues of current eLearning (i) show the same web page to all users regardless of student characteristics, (ii) class-oriented ie material intended for a specific target audience, so that the different user groups will be difficult to understand the material, (iii) the risk of lost in space in the learning material. This is lowers the effectiveness of learning so that it becomes less than optimal.

The advantages of the adaptive eLearning system are (1) well managed as LMS capable of displaying alternative learning pages according to individual characteristics, (2) oriented to broader user groups, (3) provide navigation to limit the flexibility of users in finding information. For work like that, the adaptive eLearning system has the main components, among others, *domain model*, *user model* and *adaptation model* [7][8][9], And has the same advantages as in Web Based Instruction that can be accessed anywhere anytime, not limited to a particular platform, easy to access and updated, faster distribution to users and more users who can access.

Therefore, it is essential for vocational schools that have implemented eLearning system although it is still conventional to update the system. So this research has a high urgency because through this research will be developed the adaptive eLearning system oriented to characteristic and requirement of student that is learning style, an ability of knowledge and student motivation (triple-characteristic model / TCM). This designed activity can involve students actively in learning so that learning becomes fun and meaningful. This condition is expected to improve the quality of learning in vocational schools.

B. Preliminary Study

Adaptive elearning or personalized elearning has been studied by several researchers. For example Personalization elearning system based ontology [10], And Development of personalized learning styles on elearning by using Felder Silverman Learning Style Model, which in this system has an algorithm that can determine the type of learning materials (visual/verbal) that can and in accordance with student learning styles [5].

The Developed an adaptive eLearning system that emphasizes key adaptive features based on student models. The proposed system can initialize the student model to determine the level of student cognitive when the student enrolls for the lecture. After the student begins the learning process and performs many activities, the system can keep track of the information from the students until he takes the exam. The level of student knowledge, determined based on the test scores, is updated into the system for use in the adaptation process, which combines the model of the student with the domain model to provide the lecture content according to the student's wishes. In this research, eLearning adaptive system is implemented in the lecture "Introduction to Java Programming Language". Once the system is tested, the results show a positive response to the proposed system, especially on its adaptive capabilities [2].

Further research conducted by [11], examines the design of adaptive elearning system based on student learning styles. The adaptivity system is based on two learning style models, namely VAK and Felder. VAK learning styles include visual, Audio, and kinesthetic, while Felder's learning style is global and sequential. This system combines both learning styles to change the presentation of each student.

[4] have developed personalization in the eLearning environment based on three parameters/factors (triple factor) behavioral patterns that affect performance and facilitate student learning that is learning style, motivation and ability of student knowledge. Student behavior patterns are observed through student activity log data where each log data provides an indication related to triple-factor identification in the eLearning system.

The Research by [7] which is basic research offers an architectural model for adaptive eLearning system automatically based on student learning style. The concept of this model is that the system will automatically adapt to the user's wishes and learning styles. The system will learn about the user when the user learns, and when selecting the content material so it is said to learn in two paths ie the students to the system and the system to the students. The researcher recommends applying this model concept to an applied research.

II. METHODOLOGY

Research at this stage is a development research that has only reached some stages, using stages of identification, analysis, and design with an engineering approach. Research steps as in figure 1.

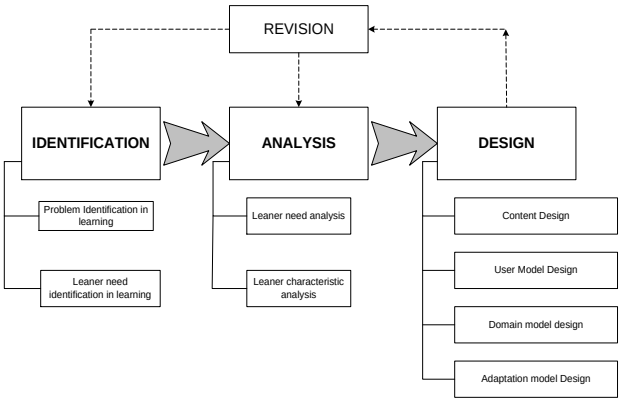

Fig. 1. Research Steps

1) Identification: The first step in developing an adaptive eLearning system is to identify the problems and needs of the students that appear in the lesson.
2) Analysis: The second step, after identifying the needs of students and problems in learning, conducted needs analysis, analysis of student characteristics and system requirements analysis. In the analysis of student, characteristics generated a questionnaire grid that will determine the trend of learning styles of students. Needs analysis is conducted to make sure that the system will be developed based on what is needed. System requirements analysis is the determination of overall system functions including expected performance and system technical requirements.
3) Design: The program design will be based on the obtained results in the analysis phase. This program design will include:
   a) System architecture, i.e. content design, user model design, domain model design, and system model adaptation design such as Figure 2 and Figure 3.
   b) Use of case diagrams, lecturer flow diagrams, and student flow diagrams

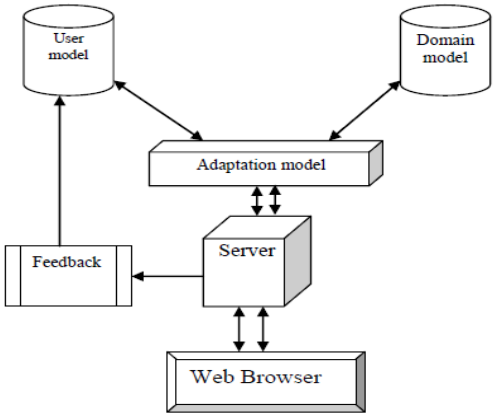

Fig. 2. AdeLe System Architecture

VAK modality consists of three layers, as in Figure 3, the learning layer, characteristic layer and personalization layer. The relationship of the three layers is, in the learning layer, will be obtained information of related patterns from student learning behavior to support the identification of the characteristic layer. Then the characteristic layer will be the basis for personalized functionality on the personalization layer.

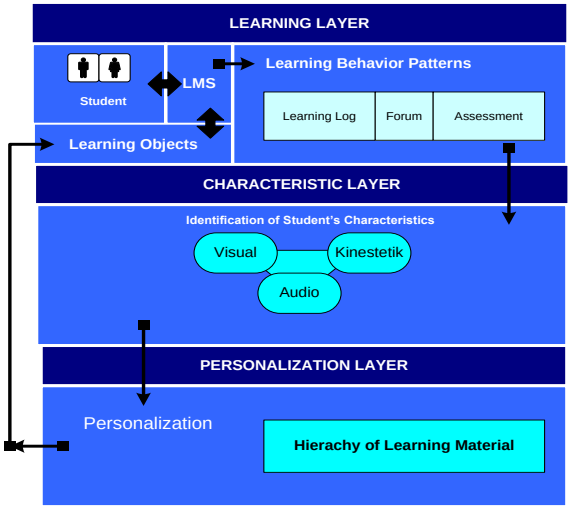

Fig. 3. VAK user Model design

While the learning layer consists of four components, namely student, LMS, Learning object and Learning behavior patterns. Students will react with the system through the LMS to get the required learning materials, forums for discussion, test and other activities. The LMS itself is eLearning software that will manage learning objects (materials, forums, tests etc.) and tools to provide information regarding patterns of student learning behaviors in online learning situations

III. RESULT

The analysis is a step that is done after identification and done in the development of AdeLe system. At this stage of the analysis, generated a description of system requirements, description of system functions and the main features of the expected system. The AdeLe system is expected to provide different material presentations according to the user's learning style trend. Thus the system should be able to identify the diversity of user learning styles and utilize the user data as a consideration in delivering material presentations. Users get learning materials in accordance with their learning styles, so that the learning process becomes effective and more optimal. Learning styles are a learning habit whereby a person feels most efficient and effective at receiving, treating, storing and removing something learned [1] [4][10][5].

To identify the trend of user learning style, questionnaires were used. The learning style model adopted in this AdeLe is Visual-Auditory-Kinesthetic (VAK). This VAK model is simple and easy to be implemented. In this model, students' learning style tendencies are identified through visual aspects (eg, drawings, diagrams, graphs, etc.), audio aspects (eg, narration, sound effects, etc.) and kinesthetic or motion aspects (eg, holding, committing, etc.).

IV. DISCUSSION

The elearning system is called adaptive when the system is able to automatically adjust to the user based on assumptions about the user [12].

The ability of adaptive elearning system to be able to adjust automatically to user condition obtained from user model. Besides being adaptive, adaptive elearning systems need to be adaptable, allowing users to change the system behavior according to the user's wishes.

Adaptive e-learning technology (hypermedia) is basically a merger between hypermedia technology and adaptive system. Adaptive elearning systems need to accommodate user conditions or characteristics and store all this information in the user model and then the system will utilize this information as a basis for delivering learning materials. The user model gets information about the user interaction by monitoring, browsing behavior, and testing.

The AdeLe system is developed on the basis of the fact that conventional e-learning has the limitations of being able to provide only the same learning material presentations for all users. The limitations of conventional e-learning systems become a critical issue when e-learning systems are applied to a wide range of users in terms of demographics, learning styles, as well as knowledge levels e.g. for distance education, as well as the level of motivation.

In a hypermedia system that is adaptive, a learner can be given a presentation tailored to his or her level of knowledge[13], with his learning style and with other preferences[14]. In this eLearning system model that is being developed, the learning presentation material is adapted to the student's learning style tendency as measured by the VAK learning style instrument (visual, auditory, kinesthetic). Thus each student will get a presentation of learning materials in accordance with the tendency of his learning style. Besides, another advantage of the AdeLe system is to overcome the problems of "*cognitive overhead*" and "*lost in hyperspace*" attached to conventional e-learning systems. The problem of "*cognitive overhead*" occurs because of additional effort and concentration in browsing activities on conventional e-learning[8].

While the problem of "*lost in hyperspace*" occurs because someone who is exposed to many links in non-linear documents tends to be lost direction. In the AdeLe system, there are two levels of adaptation depending on who started to adapt in this regard whether the system or the user. This term leads to two kinds of adaptations: adaptivity and adaptability[15][9] . Adaptivity is related to the ability of the system to represent the user characteristics. While adaptability refers to the capacity of the system to support users who will make modifications. In designing an adaptive system, the issue to consider is how to balance between the two adaptation levels.

The AdeLe model developed in this study will implement the two levels of adaptation. Implemented adaptivity functions include the presentation of learning materials according to user learning styles. While the adaptability functions that are implemented include: changes in user profiles, changes in learning style modes when the user has completed the test questions. In the process of developing, AdeLe system is always done a continuous evaluation or ongoing evaluation. The point is that evaluation activities can be done either at the stages of analysis, design, or implementation. With evaluation expected improvement can be done at every stage of system development.

V. CONCLUSION

AdeLe's system design of the diversity of learning styles is done following a engineering approach with stages: identification, analysis, and design. In the analysis phase, the questionnaire gratings were generated which determined the student's learning style trend and became the foothold in designing the AdeLe system. Furthermore, it is necessary to implement the implementation stage to generate programming code, web page display, eLearning system as a whole, and alpha and beta testing evaluation phase. Meanwhile, to know the effectiveness of the system in learning, it is necessary to conduct experimental research involving the real users.

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The Concept of Pedagogical Content Knowledge (PCK): Recognizing the English Teachers' Competences in Indonesia

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***Abstract*-- This article discusses the concept of Pedagogical Content Knowledge (PCK) in Indonesian school context. The PCK is described as the basic skill for teachers in order to develop their teaching quality and strategy. The focus of the discussion is in the English teaching strategy in Indonesia. The review found that PCK on English teachers in Indonesia needs to be improved especially in pedagogical knowledge of teaching strategy and knowledge of learners. It is recommended that the control and evaluation from government and other stakeholders would maintain the quality of teachers. Furthermore, the competencies would be more magnificent when teachers emerge the dedication and commitment in their profession.**

Keywords—PCK concept; content knowledge; pedagogical knowledge; English teacher's competences

I. INTRODUCTION

Pedagogical content knowledge (PCK) was first introduced by Shulman in 1986, and described as the synthesis of teachers' subject matter knowledge with their pedagogical knowledge. PCK is the integration between content knowledge and pedagogical knowledge of the teachers in delivering a subject matter in accordance to the ability and interest of learners [1]. However, some studies identified the PCK is the knowledge of content subject matter (CK), pedagogical knowledge (PK), and knowledge of learners [2], [3], [4]. Thus, the PCK attends to lead teacher in solving student's misconceptions about the subject that they learn.

Many studies have examined the impact of PCK on the quality of teaching and learning in the area of mathematics and science [5], [6], [7]. However, the study in the field of teaching English as a second/foreign language is still rare [8]. Therefore, this paper will focus on pedagogical content knowledge and its application in the teaching English in Indonesian context.

In Indonesia, the concept of PCK is categorized as teachers' competencies. Some training is conducted in order to develop this ability. Further, the government regulates it in the rule of Ministry of National Education (MoNE) number 16/2007. Some studies of PCK in teaching EFL in Indonesia are conducted to measure and to prove to what extent the PCK of the teachers influence students outcomes [9], [10], [11], [12]. Hence, it is necessary to identify what are the significant issues related to English teachers PCK in Indonesia.

II. PCK; DEFINITION AND CONCEPT

Pedagogical content knowledge (PCK) has been a significant topic to be discussed in the teaching quality since decades. Shulman (2004) bold that PCK is a combination between a specific subject of subject matter knowledge and pedagogical knowledge that is important for teachers to be possessed. These two domains are integrated. Subject matter knowledge or known as content knowledge (CK) is the knowledge of the specific topic, which teacher requires teaching it. For example, English teacher should have the ability of understanding on English materials and capable of delivering it to her/his students. This domain becomes a prerequisite knowledge in PCK Concept.

Another domain is pedagogical knowledge (PK). Shulman (2004) stated that PK involves the teaching principals and strategies that are applied in the classroom management and organization. Furthermore, the PK also includes teacher's knowledge of students learning, assessment and education purposes [13]. The integration of two domains can be described with the figure as follows [14].

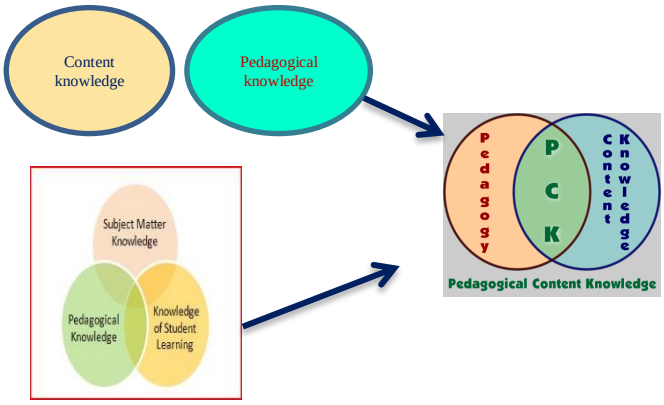

Figure 1 Integration of two domains

As the integration of both CK and PK, PCK is designed as the knowledge indicates teachers' capacity to transform the content knowledge, and suits to different learners' ability and background [15], [16], [17]. Therefore, a teacher with good PCK domain will produce a decent teaching quality and students' achievement. Ashton in Cochran stated that [18]:

> 'Pedagogical content knowledge is a type of knowledge that is unique to the teachers, and is based on the way teacher relate their pedagogical knowledge (what they know about teaching) to their subject matter knowledge (what they know about what they teach). It is the integration or the synthesis of the teacher's pedagogical knowledge and their subject matter knowledge that comprises pedagogical content knowledge (PCK)'.

According to Shulman, PCK is part of teachers' professional criteria. The same idea also delivered by Darling-Hammond and Stronge. According to them, some principles of teachers' professionalism might give positive correlation into students' achievement. The criteria such as general academic ability and intelligence, subject matter knowledge (content knowledge), certification status and knowledge of teaching learning (pedagogical content knowledge) are the current factors for students to meet their positive outcomes [19], [20].

III. CONTENT KNOWLEDGE (CK)

The content knowledge is the core knowledge of teacher in particular subject and specific content area. For many years, some researchers focused on the discussion that teachers' content knowledge impacts students' achievement. Those studies found that the lack of teachers' knowledge should find the difficulties of the teaching-learning process [21], [22], [23], [24]. Darling Hammond stated that teachers' content knowledge is the fundamental requirement for an effective teaching [25]. Furthermore, content knowledge of teachers influences the teaching-learning process, and it makes the substantial effect for learners' achievement.

Due to English teaching, a study conducted in 2016 included some teachers across language speaking countries such as Canada, New Zealand, and the USA. It found that a reading progress at the school could be the failure with the lack of an effective teaching [26]. The study was focused on the reading for learners with dyslexia. At this stage, they stressed the teachers' content knowledge or teachers' understanding of reading concept, which has a significant influence on learners' understanding of learning the English language. The content knowledge of teachers may improve their initiative in the teaching process. It also developed more teachers' attention to developing their knowledge.

In Indonesia context, content knowledge is one of an essential requirement for teacher qualification. It is set in the Ministry of National Education (MoNE) rule No.16 year 2007 stated that teachers must have a minimum education qualification diploma four (D-IV) or Bachelor (S1) study program under the subjects taught / of teaching, and obtained from accredited study programs [27].

Besides an academic requirement, the government also develops some programs to maintain teachers' content knowledge. For instance, a *Pendidikan dan Pelatihan Profesi Guru* (PLPG) or Education and Professional Training of Teachers is the training that held by MORA and MoNE to enhance the professionalism of teachers which included a certificate afterward. This training has a variety of duration from 9 days until 165 days that it depends on the skills need of the teachers [28]. Since the training stimulates teachers' knowledge of materials and pedagogy, they will have more opportunity to succeed learning process in the classroom.

IV. PEDAGOGICAL KNOWLEDGE (PK)

Pedagogical knowledge (PK) is another element inside PCK. The knowledge is related to the ability of teachers in delivering the effective teaching and learning atmosphere for all learners. Shulman says that pedagogical knowledge is the knowledge, theory, and belief about the act of teaching and the process of learning, which it figures the teacher's approaches in delivering a subject in the classroom. The learning process also provides all activities from developing the materials, classroom management, learning habit, problem-solving, methodology, strategy, and assessment [29]. The successful of these events determines the improvement of students learning outcomes.

The experience in teaching would be a factor for teachers in developing the aptitude of PK. For instance, Gatbonton has tried to compare between experience and novice ESL teachers in their pedagogical knowledge. He found that the pedagogical knowledge between the two groups is similar. However, the experience teachers have the more detailed pedagogical knowledge, especially in recognizing students' attitudes and behaviours [30]. It means that teachers' educational background provide the development of teachers knowledge in teaching a subject. Further, the experience will strengthen the knowledge to make teachers more professional in their field.

From the Gatbonton study, it could be concluded that teachers' training, which they gain in undergraduate study, may develop the pedagogical knowledge. It was been proved by Hudson. His study had been held in Australia with math and science pre-service teachers from nine different universities. Those were gathered to be treated and mentored in a specific subject area. The mentee then being observed, reviewed, and evaluated on their overall teaching ability. The study revealed that coursework, mentoring and fieldwork for pre-service teachers during undergraduate have influenced their pedagogical knowledge [31], [32].

The two studies considered that the durations of teaching experience and the training of teaching are necessary to support teachers' quality. Teachers' training develops teachers' knowledge in mastering the subject. The training also encourages the teachers to increase teachers' quality in the teaching ability. Further, the experience teachers have more opportunity in developing their professionalism. The

experience teachers are used to face many situations in the process of instruction. Therefore, they might establish their teaching strategy in some different atmosphere of teaching. Moreover, the experience teachers also have more chance to face many characters of students. Thus, they may have more knowledge to understand students' learning problem compare to the novice teachers.

V. THE ENGLISH TEACHERS' PEDAGOGICAL CONTENT KNOWLEDGE (PCK)

Since the PCK integrates specific content knowledge and pedagogical knowledge, an English teaching subject becomes one of the specific issues that could be discussed. Some studies have involved seeing English teachers PCK and how does it work in teaching learning process.

Research, conducted by Liu, discussed the pedagogical content knowledge (PCK) as a case study on the elementary teacher [33]. The research setting is in the US, and the candidate is a native English teacher. Based on Shulman theory, Liu adapted the understanding of PCK as the combination of subject and pedagogy. The research gave the insight into how teacher elaborate the subject matters into well organised, interesting, and accommodate students' needs and ability.

At this stage, Liu separated between subject matter and pedagogy in the concept of PCK. People with ESL content knowledge would be able to teach because CK is the ability that possesses by the teacher. However, a teacher with PK would have more opportunity to have the variety of teaching strategies, which the learning process would run efficiently.

In the study, PCK is categorised on; subject matter knowledge, pedagogical knowledge, knowledge of learners, and knowledge of teaching context. However, for the study, the participant was emphasized on pedagogical knowledge only. The instruction materials did not follow the syllabus. Therefore, the teacher makes his/her philosophical beliefs that cause different nature of teaching. This learning model became uncontrollable and teachable.

The PK will be gain better through experience in teaching in the real classroom. The extended period of teaching will create the more professional teacher in their field. Therefore, the teacher candidate needs to acquire teaching skills in teaching education program, and they require more practice in the real classroom rather than the only read and learn from the scratch.

Another qualitative study conducted by Irvine-Niakaris and Kiely explored about PCK that supports teaching English as a second language (L2) especially in reading skill [34]. The research was cantered on teacher's knowledge about reading instruction (KARI) and knowledge about the text (KAT). KARI is the ability that needs to be possessed by the teacher to build reading teaching strategy. Meanwhile, KAT is the ability for the teacher to understand the context of the text, so, he/she may create the schemata for learners to understand the text as a whole.

They stated that teacher should have mental cognition including how to think, know, and believe in complex nature of teaching to enhance the effectiveness of teacher education. This would be considered as the appearance of PCK. The PCK includes in teachers' understanding of subject learners, curriculum, context, and pedagogy Subject content and pedagogy are central in identifying teacher's knowledge in applying the variety of teaching and learning context.

The PCK is applicable in teaching reading L2 in the classroom practice. Therefore, the study is focused on reading comprehension that included the understanding of word recognition, morphology, syntax, and connecting to the main idea. This research considered that the bottom-up model was more significant to be chosen since it focused on the word level. The word level may lead students to recognise the words; therefore, they may have more chance to understand more about the text. On the other side, top-down model invites learners to make a prediction which it would make students able to recognise the main idea.

At the teaching process, they applied pre-reading, while reading, and post-reading technique. In the pre-reading, teacher stimulates students' thinking before they read the text. The teacher invites students to build the information about the theme that they are going to read. This would track students read easier. In a while reading session, teachers as guidance in inviting students' comprehension through prompting, probing, and modelling.

The PCK, at this stage, accommodate both pedagogy and content knowledge. In pedagogy, teaching reading focuses on the instructions and teaching strategies; while, content knowledge is focused on text genre and reading text constructions.

The research revealed that teachers' KARI 'reflected their cognition study. They could manage the organisation of teaching process from pre, while, and post reading stages. Regarding the teachers' KAT, all teachers demonstrated the capacity in analysing the text and comprehension questions. The function covers aspect detail such as vocabulary, paragraph structure, and text purposes.

VI. PCK AND ENGLISH TEACHERS' COMPETENCY IN INDONESIA

In Indonesia, there are also some studies of PCK in teaching English [35], [36]. For instance, a study conducted by Faisal discussed the concept of PCK in English subject in Indonesia. The study focused on teaching English based on the curriculum year 2013 (K 13) [37]. He explored how the PCK concepts matched to the curriculum, specifically in the English subject.

In teaching English, PCK took the necessary rules because it constitutes teachers' ability in subject matter and the way they transform it to the learners.

Based on the regulation of Ministry of National Education (MoNE) number 16/2007, PCK is noticed as Pedagogical competences. It is categorised into four specific groups including competency of pedagogy, professional, personal, and social. Pedagogy competence is the ability to manage an instructional practice involving students. Professional competence is the ability to understand the subject matter properly. Personal competence is the ability of teachers to develop and maintain their good character in order to be a model of the learners. Social competence is competence to communicate and interact with pupils, colleagues, learners' parents, and surrounding community efficiently and assertively.

The four components are necessarily needed for English teachers in Indonesia. The elaboration of the component will develop teachers' professionalism. Thus, the quality of the teaching can be maintained. The competency of pedagogy, professional, personal, and social are integrated into PCK domain as follows. First, PCK domain of knowledge of curriculum includes in the competency of pedagogy. In pedagogy knowledge, the teacher considers to develop the learning curriculum and mention the principles of the instruction. Teachers also need to understand the aims of the instruction and what the possible strategy to applicate the subject in the class. Other pedagogy knowledges are also related to teachers' ability in selecting suitable learning experience and instructional objective and develop indicators and instrument of assessment. In professional competency PCK concerns on teachers' understanding standard and essential competencies, and learning objectives. At this stage, in understanding curriculum, an English teacher should acquire between concept theory and practical matter. In other words, they should understand how to develop instructional practice from planning to evaluation.

Second, PCK of knowledge of subject matter integrates with teachers' professional competence. The mastery of subject matter in language includes teachers understanding on language knowledge such as linguistics, discourse, sociolinguistics, and strategy. Further, teachers also need to master the English communication effectively.

Third, PCK of knowledge of learners integrates with pedagogy and social competencies. At this stage, teachers should recognise and understand student's potential and ability. Thus, they may find and analyse student's difficulties in learning English. To achieve this, the teacher needs to develop their effective, emphatic, and tactful communications to the learners. This, of course, requires a social competence where teachers' behaviour is considered. The social competence also stresses on equality, objectively and equitably in treating students in the classroom. Knowledge of learners is also related with students' cultural approach. It is the ability of teachers to teach English based on students culture.

Finally, PCK of pedagogical knowledge integrates with pedagogy and professional competencies. It is related to the teacher's learning organisation in the class, which invites their creativity in transforming the materials. At the conclusion, the PCK concept endorses the teaching strategies, methodologies, and techniques.

However, some studies in Indonesia reflected that the PCK of English teachers is needed to be improved. For instance, a qualitative study conducted in Banda Aceh found two problems that need to be considered by teachers in developing their PCK [38] Based on his observation; those teachers are still weak regarding pedagogical knowledge and knowledge of learner's category.

Although the teachers teaching strategy were in the context and the right teaching tracks, the creativity of teaching approaches still needed to be developed. Further, the knowledge of learners tended to be poor since the teachers did not show the engagement between the instructor and the students. They put lack attention and interaction to solve students 'problems and misconceptions in understanding the subject. Therefore, this weakness indicates the low of learning effectiveness.

The obstruction in developing good PCK for English teachers in Indonesia may face the solution in some strategy. First, the control from government and schools' stakeholders is necessary to maintain the quality of the teachers. However, it also needs to be balanced with the other support including school and class facilitation and financial. Second, the most important maintaining of teacher' PCK is the teachers themselves. The high teachers' dedication and commitment in teaching the students tend to increase the quality of teaching [39]. Therefore, as the main role of teaching and learning process, teachers need to develop and elaborate their skill of teaching and have the huge responsibility to reach the aim of the teaching goals.

VII. SUMMARY

To sum up, content knowledge and pedagogical knowledge are significantly needed in teaching English. Pedagogical content knowledge (PCK) can develop teachers believe in teaching English into a better way. PCK in English teaching would help teachers to understand how to explore their content knowledge and how to deliver it into a good instruction. The teachers' ability such as professional, personal and social are elaborated into PCK domain. The knowledge such as subject matter, curriculum, teaching strategy, and learners' learning will be an important element to be possessed by the teachers in order to maintain students' learning achievement.

In Indonesia, PCK is known as pedagogical competencies. The government put it as a serious matter to (or "intending

to") maintaining teachers' professionalism. Therefore, it has been regulated by Ministry of National Education (MoNE) number 16/2007. Some moves to develop PCK domain on English teachers in the schools are conducted to apply the regulation. However, some issue like students' approaches, teaching strategy, and teaching creativity are the significant matter to be noticed. This problem would be solved with the proper control of stakeholders and the will of teachers themselves. Thus, within the time of teaching and learning process, the obstruction can be resolved.

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An Alternative Rendering Solution in Animated Movie Making for Final Year Students: A Case Study

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***Abstract*— The rendering stage in creating 3D animated movies using Blender is a phase with time-consuming process. The more complex the animation, the longer it will take. The same obstacle experienced by final year students of Informatics Engineering Department, Undiksha, who mostly use one computer at a time for rendering. This inhibits the animation making process and causes the progress of their final project takes too long. This problem can be reduced by utilizing Blender network rendering to help complete the process become faster. Unfortunately, the generated output by this feature has to be processed further to obtain the desired result and not much flexibility available to extend it for customization. This paper discusses a proposed alternative by integrating a grid-computing framework that can be programmed and customized as needed. With this approach, the students also will be able to retrieve the results right away without doing some further work on the output.**

Keywords—network rendering, grid computing, Blender 3D, animation

I. INTRODUCTION

Decision to raise a topic related to 3D animated movie making in a final year project becomes a challenge for students especially in Informatics Engineering Department (PTI), Undiksha. In general, 3D movies which have duration for about 15-20 minutes require a very long work even for months so the project that ideally should be completed within one semester generally could only be completed within for two semesters or more. In addition to the external factors of the students themselves are the creativity and skills of students in using the software as well as the level of complexity of animated movies that will be made are parts of the common obstacles faced by students. However, the support of existing facilities specifically for animated movie making becomes an equally important factor in providing support to complete the final project in timely manner. A survey conducted on five students who were doing animated film development at the time argued that the minimum specification required for a PC should be at least with i-7 processor and a minimum of 16 GB RAM. On the Blender official website, the best production specification environment to use Blender software is a PC with 64-bit eight core CPU, 16 GB RAM and Dual OpenGL 3.2 Graphics Card with 4 GB RAM[1]. Unfortunately, PC specifications available at LCI Laboratory in PTI, Undiksha are as follows: Processor Intel Core i7-3770 CPU @3.4 GHz with 6 GB RAM.

During the 3D animated movies making with Blender, the most time consuming stage is in the rendering stage. Rendering is a process of converting data from objects seen in Camera View in Blender 3D into image files or animated movie files. Where setting the desired image or movie output format, whether it is the quality or the setting of the number of frames per second, will affect the length of time required to complete the whole process [2]. With the facilities, the PTI department has and using only one PC at a time, to produce an animated movie with 300 frames, the PTI students need about 6-12 hours for the rendering alone. Some of them even need up to 3 days when they render 980 frames.

The Blender 3D actually provides a feature to do rendering on a network. It works by using a computer as a server/master, one another as a client and the rest as a slave. However, the configuration of this feature is somewhat complicated when used such as the started service of the master and slaves often get disconnected and needs to be re-enabled every time a new file is loaded. The rendering result format is also different with the selected one during the input file creation that is in an EXR format (a dynamic range raster format developed by Industrial Light and Magic). The format is suitable for purposes such as further digital compositing, but in most cases, the PTI students need the output to be in the selected format as in the Blender during the file creation such as PNG or AVI format.

Therefore, to address the limitation, the authors proposed an alternative solution by utilizing a programmable grid-computing framework by adopting some existing solutions and exposing them to the following sections. Section 1 is an Introduction, Section 2 discusses some case studies and approaches conducted in several related studies, Section 3 discusses the used method, Section 4 deals with the design and implementation results in prototype form and Section 5 includes the conclusions.

II. RELATED WORKS

Application of network-based rendering in 3D animated movie making has been done in many cases. Even cloud-based grid rendering services are also easy to find nowadays. However, there are several reasons why these solutions are not feasible to be used especially by students in the department of PTI, Undiksha. First, online services require adequate internet facilities. In Undiksha, this alternative would be expensive for the students because the internet for everyday needs is still insufficient. Secondly, cloud-based rendering service is mostly an average of commercial services so that there is a relatively expensive price for the students so that the use of this alternative is still considered as a less economical choice. Third, the topic of student thesis is sometimes a topic with

original themes whose expectations can be further developed by the students concerned. An online rendering service would require that animated movie material be uploaded first. This allows copyright abuse of animated products uploaded online so this alternative is also hardly considered among students at PTI. Related research has also been done by Bui [3] which in the research, the author designs a distributed rendering system with algorithm made based on Python library. Bui points out that the constraint in the design is the challenge to specify parameters in order to reduce stagnant conditions when a computer inside the cluster fails to complete the working part. Ginty in his research has compared several alternative of distributed rendering mechanisms by using supporting software such as Autodesk, Yadra with Blender, Cinema4D and NewtTek Lightwave which has managed to provide efficiency to the rendering process that previously took 70 to 90 hours to only about 30 minutes [4]. Patoli in his research has successfully used an open source alternative that allows rendering in the network that is done by utilizing Condor and Blender 3D software. It is just that by using a Command-based Condor, rendering results still exist in the slave computer. New program implementation is required by using Python to transfer all rendering results to the source computer. In addition, the job monitoring system used does not come from the framework that can be utilized directly, but must be developed separately [5]. Sheharyar has designed a rendering farm system that works really well by adding software scheduler with firstly comparing some of available options. It is just that in the prototype tested, the author has chosen to use Cube and Open FBS, in which the Cube framework does not support 3D Blender software. So the presented rendering test results is produced from using 3D animation software Autodesk 3D Maya which is a commercial software [6]. Another study was conducted by Xiong who uses JPPF framework as a basic technique for retrieving data from MS SQL Server databases. Additionally in his study, Xiong implements query processing using a range partitioning scheme which uses several different tablespaces to store data in a given table [7].

In this paper, authors proposed an alternative rendering system design that is adopting the existing solutions which is specifically for rendering animations built using the Blender 3D application. In addition, the authors will discuss the way in the design so as to provide an increased time efficiency to the rendering process when compared to using the network rendering provided directly by Blender 3D.

III. METHOD

In the design of the system in the form of prototype, the authors follow the framework of Software Development Life Cycle (SDLC) approach with prototyping model. According to Agarwal, this model is well used to develop systems with technical solutions that are not yet known clearly at the beginning. In addition, this model is suitable for use when it is not possible to make ready-to-use products in one manufacturing cycle so that a starting product is made and then discarded to produce a more perfect product thereafter [8]. Stages in this model consist of the Quick Plan, Quick Design Modeling, Construction of Prototype, Deployment Delivery & Feedback and Communication. The whole stages are done continuously until the product prototype is obtained as expected. In the planning and design stage, the authors explore several open source software frameworks to be able to make the system prototype faster.

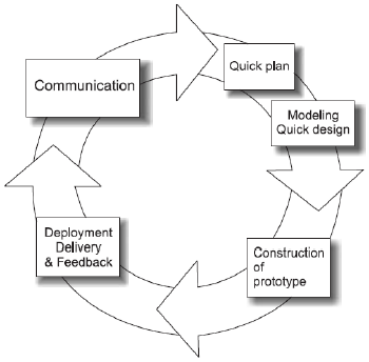

Figure 1 Prototyping Model

To examine the case study problems undertaken at the LCI Lab, a case study method as elaborated by Yin in his book entitled “Case Study Research: Design and Methods” was followed and modified as depicted in Figure 2. During the design and development stage of the model, separate rendering using 3D Blender was prepared. On the other hand, a new proposed rendering system was built. Each system was tested using the same input files to generate outputs. Both outputs were then compared, analyzed further to obtain a conclusion report.

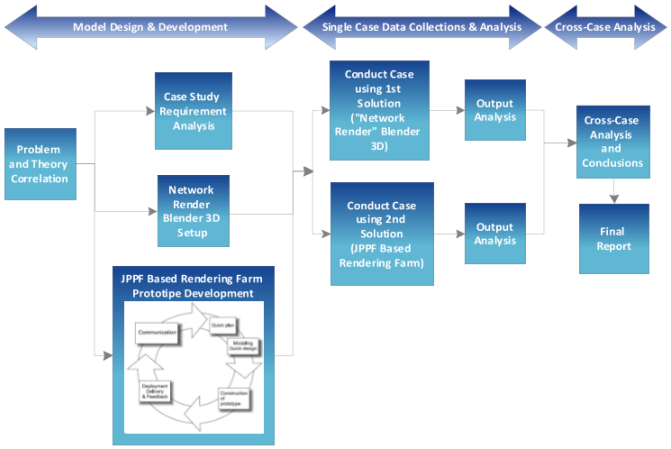

Figure 2 Research Method

To build the system prototype, the Grid Computing framework, JPPF that was used by Xiong in his research [7] is adopted. The framework architecture is a driver / node topology that simply consists of three components i.e. client, driver and node components. The illustration is as shown on Figure 3.

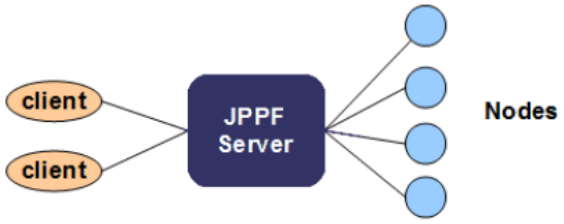

Figure 3 Architecture Topology of the JPPF Framework [9]

A LAN network is required to connect some of the regular computers to be used within this system. A computer on the Client side is used to start rendering the job by uploading a 3D Blender file to a computer that acts as a Driver. Next, the Driver will set the scheduling to divide the work into smaller units called Tasks. A 3D Blender file generally consists of several Scenes where each Scene consists of several Frames that make up an animated file into a single Blender file. The Driver divides the total Frames that must be rendered based on the total Nodes connected proportionately according to the exclusion algorithm that has been configured in JPPF. Furthermore, each workmanship by each node is reassembled by the Driver and forwarded to the desired output folder on the Client computer. To combine output from multiple Nodes, the author uses the FFMPEG open-source software assistance [9]. Furthermore, the author also utilizes the technique of load distribution based on in-memory data grid by using Hazelcast [10] especially when transmitting input and output files from Client side to Node side, and vice versa.

IV. Results

The overall system is a set of programs combined as an application that is the result of integration of JPPF, Hazelcast and FFMpeg framework as in Program Details.

TABLE I. PROGRAM DETAILS

No	Program Name	Description
1	JPPF Driver Application [9]	This set of software is readily available from the JPPF framework that must be configured and used right away. It is executed on one of any computer in the network to act as the Driver
2	JPPF Node Application [9]	This set of software is readily available from the JPPF framework that must be configured and run on each of the computer that we use as the nodes. The node would connect to the Driver to execute a given task(s).
3	JPPF GUI Application [9]	This set of software is readily available from the JPPF framework that must be configured and run on any one computer that we use to monitor the grid system.
4	Client Application	This is the developed application in the form of prototype to be used to send the rendering job to the Driver.

The system architecture is depicted in Figure 4.

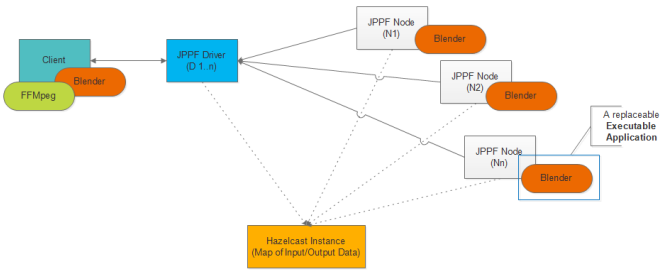

Figure 4 System Architecture

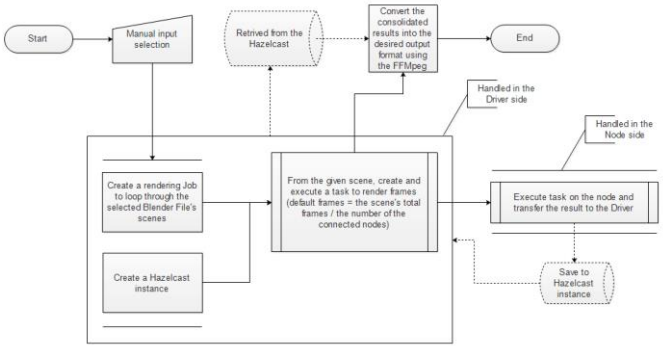

Figure 5 the algorithm flowchart of the new system

The main benefit of using this architecture is the flexibility of the overall supporting frameworks that are programmable and based on the same Java programming language so it can be ported in any platform without the need to redevelop the solution. Each of the programs can be configured and run as a daemon or service in the Operating System that is used. This will give the opportunity to use the computer for other purposes while it is helping in the rendering process. Another benefit is the use of the Hazelcast's in-memory data grid technology that allows the input as well as the chunk of the output files are stored in the grid so it is accessible directly by a connected computer used as the client for the final consolidation. The design also integrates the FFMpeg to convert the final output as the desired audio/video format such as AVI/MPEG [10]. Furthermore, the JPPF framework that is used would allow an external application such as Blender to be attached and called as a task forwarded to the nodes. It can actually be replaced to use other application to make up a new solution for other use cases. As shown in Figure 5 the Hazelcast and the FFMpeg are another frameworks which help in storing results and converting them into the desired movie format.

The client application of the new system is depicted in Figure 6. The monitoring interface of the Blender 3D is depcited in Figure 7. For the new system, the JPPF framework that is used has been accompanied with a comprehensif user interface for the grid monitoring as depicted in Figure 8.

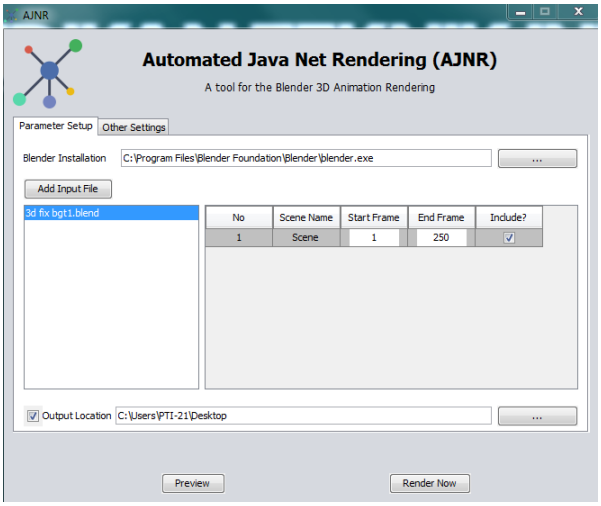

Figure 6 the new system client application

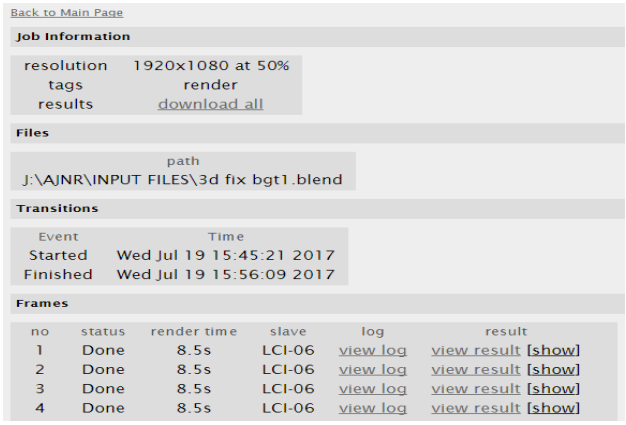

Figure 7 the Blender 3D Network Render Monitoring Interface

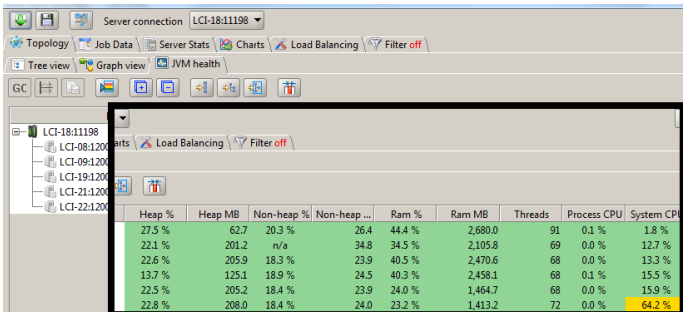

Figure 8 JPPF Grid monitoring interface (JPPF GUI)

To perform a rendering using the new system, the following steps need to be done: (1) *Configure the JPPF Driver and Nodes.* There are mainly three sets of program that comes from the JPPF frameworks and need to be configured before the rendering activity can be started. They are JPPF Driver, Node and GUI programs. In the Driver configuration file, one important aspect that we can select the algorithm used by the framework to distribute the workload to the nodes. This later can be done during runtime on the JPPF Grid GUI as well. In the Node as well as the GUI programs, we need to set computer Driver. Once it is done, ensure to start the Driver beforehand followed by the Nodes and the GUI if we want to monitor the job through the interface. The rendering can be started through the Client application which can be reside on any computer of the network.

For a preliminary result, the authors conduct some observation by rendering the same Blender 3D file in a network with five computers using both of the Blender 3D network-rendering feature and the prototype system as in

.

In term of time efficiency, results of both systems show that, the Blender 3D excels better than the new system except for the Low Poly Animation. However, the output files still reside in the slave computers and its format is in the EXR format although the selected output file format for the used blender input file was in AVI-Raw format. While the result from the new system converted as the desired output which is AVI format in this case.

TABLE II. PRELIMINARY TESTING RESULTS

Input File Info	No. of the testing cycles	No. of computers on the network	Blender Network Render		The Prototype System	
			The average elapsed Time (in minutes)	Result Format	The average elapsed Time (in minutes)	Result Format
(file 01) 250 frames, High Textured Animation, AVI output	5	5	10.8	EXR	11.2	AVI
(file 02) 1336 frames, Sketching Animation, AVI output	5	5	2.37	EXR	3.15	AVI
(file 03) 140 frames, Low poly Animation, AVI output	5	5	2.45	EXR	1.13	AVI

The longer spent time in the testing scenario when the new system was used is due to the additional round trip impossed during the output file transferred from the node to the clinet computer. As opposed, the Blender 3D rendering

version does not transfer the output file from the slaves to the master at all unless a manual download is performed thereafter. As seen, there is a metadata logging information if access from the monitoring interface as shown in Figure 7 which tells that the saved output file by the Blender 3D rendering version are still in the respective slave computers. There would be also another spent time if we download the file from the download link provided. But, instead of done automatically, in the Blender 3D version, it must be downloaded manually. Therefore, a bit longer time taken when using the new system is still acceptable as the convertion process are done automatically and the result is delivered as expected.

The following are some sample of the generated output file from both systems.

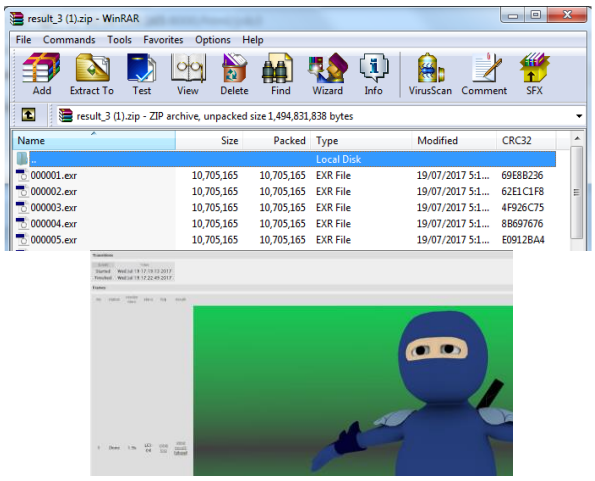

Figure 9 Blender Network Rendering' result in EXR format

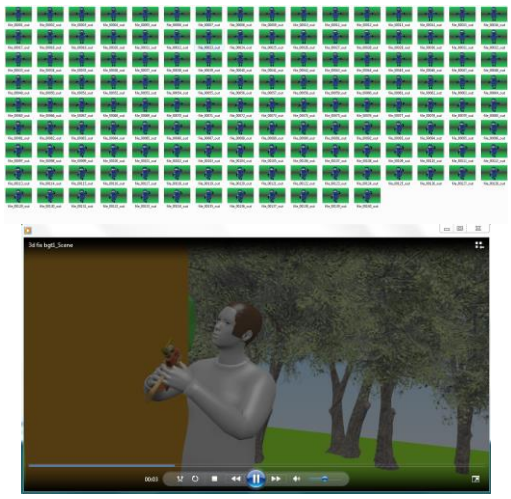

Figure 10 new system results in PNG and AVI formats

In term of the framework stability, the JPPF integration with the in-memory data grid framework, Hazelcast, has been observed that the connection between the Nodes and the Driver are getting lost and suddenly disconnected after some input file processing. And if the input file is considerably large, the Driver would face a timeout issues and need to be restarted.

Apart from that, in term of the ease of use functionality, the new system with the framework collaboration is a good approach to achieve better result for PTI students case requirement if compared to the Blender 3D feature. In order to provide the similar information and setting as what can be done in Blender 3D, the new system needs to access and integrate more Blender API into it.

In future this can be enhanced to follow the same mechanism as done in the Blender 3D whereby the round trip can be minimized by allowing the node to transfer the result files once the whole job is considered done and the client to perform the convertion thereafter. But this means that the algorithm should utilize the frameworks capability in detecting whether the nodes could potentially not sending the results at all. Another consideration is the distributed processing mechanism. The current approach is using the blender installation instances which must be available in the computer nodes as well as client and they are called as external processes during the system run. This makes another complication during the system setup although it is done once on the first time. Moreover, the input file downloading is required on each of the nodes side before the actual rendering could be done. This can be enhanced to perform the computation without the needs of transfering data between the Driver and the Nodes computers which shall overall save more time.

V. CONCLUSION

The new proposed system is considered promising to be developed further as an alternative solution for the distributed network rendering into a final working product. Some benefits can be drawn from the solutions. Such as, the flexibility to customize the solution for e.g. it could be extended as a volunteer grid computing application that allow anyone to connect and contribute during the rendering process as well as adding some features for enhancing the usability such as giving notification of the render progress to the student through email. The use of the prototyping methodologies instead of the traditional method for e.g. the *waterfall* model has proven to be very effective to address the system shortfall during the prototype system development. The grid framework used for this case as compared to the available Blender feature is considered more stable although a further analysis is needed to fix and enhance the connection issues. Another challenge is to analyze further a similar grid-computing framework for the in-memory data grid such as Apache Ignite and exploring more on the algorithm to minimize the time required to transfer the result file from the node to the client before considering building the working product.

ACKNOWLEDGMENT

Thanks to the PTI laboratory assistant and students who did volunteer works in helping us fixing the network related configuration during the system testing.

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Coral Bleaching on Lembongan Island, Nusa Penida, Bali

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***Abstract*-The objective of this study was to determine the extent of coral cover that experienced coral bleaching and its impact on coral reef ecosystem. The study was conducted from 2015 to 2016, using manta tow survey method and line intercept transect. Research showed that life coral covering equal to 63 – 91%. Coral bleaching occurs 27.51% at depths of 3 meters and 17.72% at a depth of 10 meters in June 2016. Coral bleaching consisted of branching coral and massive corals. Reef recovery occurred in November 2016.**

Keywords-Coral bleaching, Lembongan Island, Coral reef ecosytem

I. INTRODUCTION

Since 2014, severe mass coral bleaching has been occurring in most tropical regions across the world in the longest mass bleaching event ever recorded. This global event was triggered by record-breaking sea surface temperatures caused by climate change and amplified by a strong El Nino (Great Barrier Reef Marine Park Authority, 2016). Coral bleaching, due to ocean warming associated with climate change, is one of the most pressing threats to coral reefs worldwide. Mass bleaching events occur during extended periods of elevated sea surface temperatures and have the potential to be widespread, resulting in significant loss of coral (Great Barrier Reef Marine Park Authority, 2016).

Climate change, and its associated impacts, poses the greatest threat to the long-term sustainability of coral reefs worldwide, primarily via mass coral bleaching events. Rapid increases in atmospheric carbon dioxide are consequently warming ocean temperatures beyond thresholds in which corals can thrive (Hughes, et al, 2003; Hoegh-Guldberg, et al 2009). Severe bleaching can cause substantial loss of coral. As corals form the foundation of the reef (Loya et al, 2001; Marshall et al, 2000; Baird and Marshall, 2002), and provide essential habitat to reef fish and invertebrates (Pratchett et al, 2008; Stella et al, 2011), the loss of coral can cause reductions in the populations of other reef inhabitants (Graham, et al, 2007)

When corals become stressed, they lose the *zooxanthellae*, reveal the white skeleton of the coral, which is known as "bleaching". Bleaching can occur when corals are subject to sea surface temperatures only 1 to 2°C above long-term average maximum temperatures (De'ath et al. 2012; Hoegh-Guldberg et al. 2014). If the thermal stress is mild or short-lived, the corals may survive. If the stress is over an extended period of time, the corals can die or partially die (Putnam and Edwards 2011; Sammarco and Strychar 2013; NOAA 2015b). Thus, lower level bleaching events can also lead to a loss of corals over time (De'ath et al. 2012).

Corals that survive from bleaching may have slower growth and decreased reproduction, and be more susceptible to disease. Coral reefs can take many years to recover after a major bleaching event (GBRMPA 2016c).

In Indonesia, it is reported that coral bleaching affects about two-thirds of coral reefs throughout 2016. The combination of El Nino and global warming are the main causes, in addition to anthropogenic factors damaged the area of water. Most coral bleaching areas are Nusa Tenggara, Bali, and southern Java. Western Sumatra, such as Mentawai, Nias, Central Tapanuli, Sulawesi and Kalimantan are also the area of bleaching based on the results of research conducted by M Abrar, a coral reef researcher at the Indonesian Institute of Oceanographic Research Center (LIPI) (Kompas, 21 January 2017).

As one of area of coral bleaching, Lembongan Island has a distribution of coral reefs with a reef edge formation with an estimated area of 250 ha (Prasetia, 2006). The reef edge formation contributes to coastal protection from abrasion threats by absorbing wave energy and contributing exciting recreational and tourism services. The coral reef formations that is directly adjacent to human activities result in this formation highly susceptible to degradation. Most coastal damage has been caused by anthropogenic action (Lopes, et al, 2014).

The study of live coral cover in 2003 and 2004 by the Livestock, Fisheries and Marine Service of Klungkung Regency, using Line Intercept Transect (English, et al, 1994), states that the Lembongan Island coral cover is in the range of 21.2-56.5% In 2003, and in 2004 the value of live coral cover in Lembongan Island waters showed an average closing value of 68.45% at depth of 3 meters and 48.82% at a depth of 10 meters.

The coral reef ecosystem of Lembongan Island has a very important value in supporting the joints of community life either directly or indirectly. Utilization of coral reef ecosystem to support community life consists of: 1) fishing activities; 2)

aquaculture activities; 3) Transportation activities; And 4) tourism activities. This whole activity is based on the social and cultural values of the Lembongan Island community that still adhere to traditional values.

Along with the passage of time, the development of rampant happening in Lembongan Island did not displace the main essence of the existence of coral reefs. Capture fishery activities, seaweed cultivation, tourism, marine transportation, social, and economic communities suppress coral reef ecosystems from all directions. Community activities forget the existence of corals as a resource that is very vulnerable to destruction, and if it happens then collapsed all the joints of life on Lembongan Island.

The objective of this study was to determine the extent of coral cover that experienced coral bleaching and its impact on coral reef ecosystem. The research also aimed to study marine biology in the marine aquaculture, Ganesha University of Education

II. METHODS

A. Place and time

The research was conducted in coastal of Lembongan Island, Nusa Penida, Klungkung, Bali. Lembongan Island is geographically located between 80 39 '47.3 "LS - 80 41' 47.7" LS and 1150 25 '36.6 "BT - 1150 28' 21.3" BT, is a small island located approximately 8 Miles south of the mainland of Bali Island or approximately 16 nautical miles east of Benoa Harbor, Bali.

The location of Lembongan Island has the following limits:

North : Badung Strait
East : Toyapakeh Strait
South : Indian Ocean and Ceningan Strait
West : Badung Strait

The study was conducted from May 2015 to December 2016 by conducting preliminary survey, secondary data collection, socialization of research plan to stakeholders who will be the target of survey, primary data collection, and data analysis

B. Research methods

Research on coral cover and coral abundance was conducted on May and November 2015. The research was started with observation of general condition of coral reef ecosystem in this area by using Manta Tow Survey method. This method is a method of observation / monitoring of a large coral reef community on a large scale in a short time (English, et al, 1994).

Manta Tow Survey method was conducted along the coast with a 2 minute interval recorded on the percentage of coral cover coral cover from closure of live, dead and soft corals (English et al, 1994). Data from the Manta Tow Survey method were analyzed and used as a basis for making a map of the condition of coral reefs in general. This map was served as the basis for determining coral reef observation stations by Line Intercept Transect method, coral recruitment and coral growth.

Line Intercept Transect method was implemented in June 2015 and November 2015, to see the initial conditions of coral cover and the end of the study. This research was conducted on 4 research stations representing sampling point of the research as shown in Table 1.

TABLE 1. DESCRIPTION OF RESEARCH STATION

Station	Location	Description
1	Pura Sakenan (North of Lembongan Island)	- Coral reefs - Seaweed cultivation - Tourism activities
2	Mangrove (East of Lembongan Island)	- Mangrove - Coral reefs - Tourism activities - Seaweed cultivation
3	Selat Ceningan (South of Lembongan Island)	- Mangrove - Coral reefs - Seaweed cultivation
4	Tanjung Sanghyang (West of Lembongan Island)	- Coral reefs - Ship activities - Tourism activities

The study aimed to examine benthic communities based on lifeform characteristics, especially morphology of the coral reef community, so it can be known the diversity of coral species in the area. Line Intercept Transect observations were performed with SCUBA diving at depths of 3 m and 10 m (English et al, 1994).

Measurements were made at these two depths with the assumption that these two depths were considered to represent coral conditions as corals normally grow well and high coral diversity is also obtained at these depths.

Research with Line Intercept Transect was conducted to collect data: 1) Closure of coral species on the basis of lifeform; 2) Closure of substrate types on observed coral reefs; 3) Observation of coral reef indicator organisms; 4) coral cover with coral bleaching (English et al, 1994).

C. Data Analysis

Analysis of coral cover using Line Intercept Transect method was done by using English, et al (1994). High live coral cover results indicated that the presence of coral reefs in the area in healthy condition was supported by the high index of diversity in the area.

The condition of coral reefs was assessed by following criteria of coral reef damage standard presented by Kementrian Lingkungan Hidup Indonesia (Minister of Environment) No: Kep-04 / MENLH / 02/2001, as in Table 2

TABEL 2. CRITERIA OF CORAL REEF DAMAGE STANDARD

Poor	Poor	0 – 24, 9 %
	Fair	25 % – 49, 9 %
Good	Good	50 % - 74,9 %
	Excellent	75 % - 100 %

Source: Kep-04/MENLH/02/2001

III. Results And Discussion

A. Lembongan Island Coastal Condition

In general, the topography of Nusa Lembongan Island is a flat land with a slope of 0 - 3% in the north and a slope of 3 - 8% in the south. Jungutbatu Village has a height of land ranging from 0 to 62 meters above sea level and Lembongan village ranges from 0 - 64 meters above sea level.

The total length of the Lembongan Island coastline is 16.3 km, divided into 9.1 km in Junggutbatu Village and 7.2 km in Lembongan Village. Coastal typology consists of sandy beaches along the 4.7 km, 5.3 km bermangrove beach, and 6.4 km of shore.

White sand beaches are generally spread in the Village Junggutbatu while in Lembongan Village there is only 0.7 km. Lembongan Island beach has a mangrove overgrown beach area of 202 ha. This mangrove forest belongs to a protected forest Registrasi Tanah Kehutanan (RTK) or Land Registration Forestry 22.

The tidal pattern in Nusa Lembongan Island has the same pattern with the clusters of the islands of Nusa Penida and Ceningan is semi-diurnal where on a day there are two tides and twice receded, but one of the highs and lows exceeds the tides and the other. Reach outreach in this area is relatively long from the coastline of Nusa Lembongan Island.

The current pattern in Nusa Lembongan Island is influenced by the macro current pattern of mass water movement in the waters of the Bali Strait, Lombok Strait and Ocean of Indonesia. In east seasons the water mass to the west of Nusa Lembongan Island is deflected to the north, whereas in the north of the island the water mass is deflected to the northeast. In the western seasons the water masses in the northern waters of the island partly move eastward and partially deflected into the Strait of Toyapakeh. The current pattern of micro currents in the shallow waters of Nusa Lembongan Island varies greatly and is strongly influenced by tidal movement.

B. Coral Reef on Lembongan Island

1. Coral covering of the year 2015

The manta tow survey results were known in the North of Nusa Lembongan Island to have live coral cover category between 3 - 5, which means that the coral cover is 41% - 100%. The area which is between Tanjung Ental, Sakenan Temple to Tanjung Pemaroan is an area that is often used as a tourist area because of its reef beauty. The strong currents in this area resulted in the closing of live corals of branching, massive, and soft coral species dominating this area. Seaweed cultivation activities were conducted in the area on the edge of the island to a depth of 3 meters.

The coral reefs in the South Island Nusa Lembongan Island had a category between 1 - 3 with a percentage of 0% - 40%. Seaweed cultivation developed in Ceningan Strait is a factor that depresses the existence of coral reef ecosystem in this area.

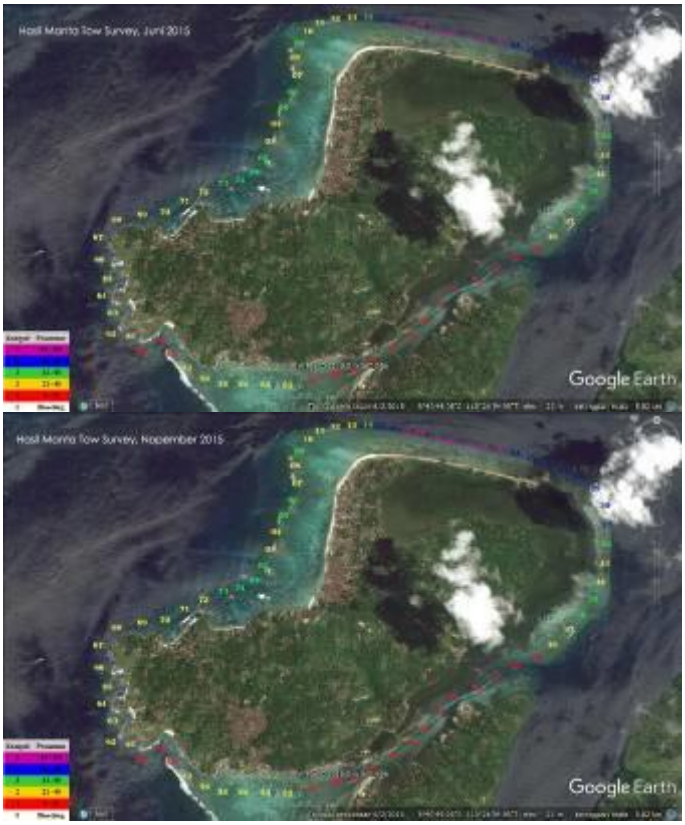

Fig.1. Manta Tow Survey June And November 2015

The western part of Lembongan Island had a live coral cover percentage of 21% to 80% with categories 2 to 4. This area is an area that is used as a tourism area, both marine tourism and accommodation facilities. In addition to the use of seaweed cultivation tourism was also done in this area.

The eastern part of Lembongan Island had a living coral closure condition with categories ranging from 2 to 4, with a percentage between 21 - 80%. This area is a mangrove forest owned Lembongan Island. The existence of mangroves in this area gives a double meaning to the coral reefs; on one side of the mangrove protect it from input from the mainland and on the other side at the ebb and subsidence of the mangrove move towards the coral reefs. Activities undertaken in this area was the cultivation of seaweed in the area in front of the mangrove forest.

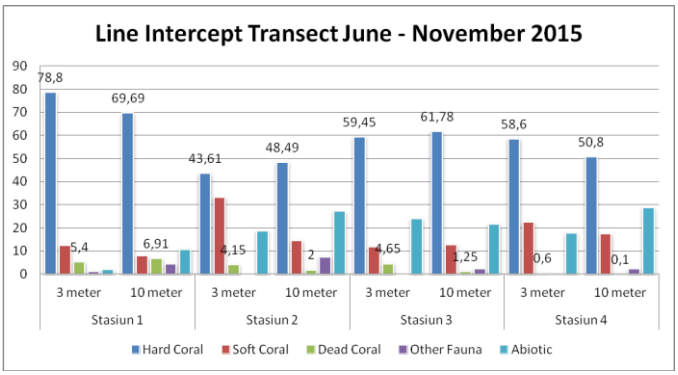

Fig.2. Line Intercept Transect June - November 2015

In general, the condition of live coral cover on Lembongan Island had a percentage of closure between 43.61% to 78.8% at a depth of 3 meters, while at a depth of 10 meters ranges from 48.49% to 69.69%.

The high coverage of live corals indicated environmental conditions that supported the sustainability of coral reefs in the region. The harshness of the currents that carried the substrate as coral food also served to minimize human activity in the coral reef area of Nusa Lembongan Island.

The coral reef structure on Lembongan Island had Acropora, Non Acropora, and soft coral formations. Acropora groups are generally branching, tabulate and submassive, Non Acropora group with lifeform: branching, massive, encrusting, submassive, foliose and mushroom

The presence of soft corals dominated the live coral cover in the structure of the Lembongan reef community, its shape or its soft life form support the ability of soft corals to survive the conditions of strongly flowing waters. Soft corals in the waters of Lembongan Island are dominated by Lobophyton sp, Sarcophyton sp, and Sinularia sp. Strong currents and water movements in this region caused corals to adapt to soft but strong shapes in essence by sticking to their substrate.

2. *Coral covering of the year 2016*

The coral cover conditions of Lembongan Island in 2016 and 2015 had relatively similar living coral cover conditions. However, in June 2016 there was a phenomenon of coral bleaching in the North and West of Lembongan Island

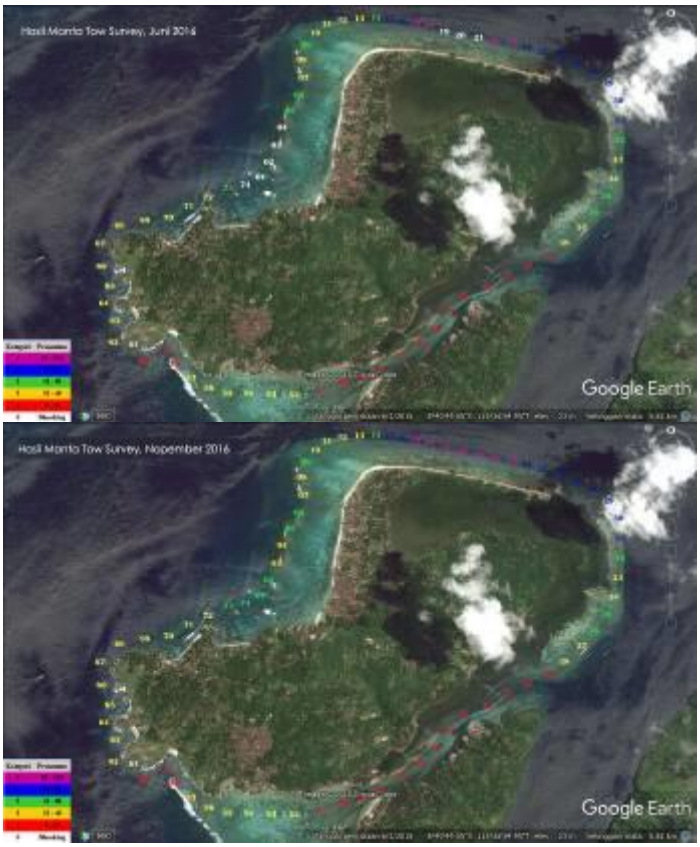

Fig.3. Manta Tow Survey June and November 2016

Coral bleaching occurs at Station 2 on the 3 meter depth where 27.51% Acropora branching was bleaching. Station 4 at 3 meters depth occurred coral bleaching at: 17,72% Acropora branching, 8.3 branching and 6.8% Coral massive

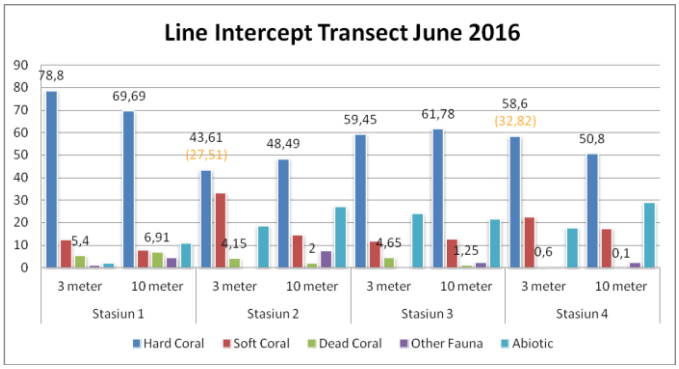

Fig.4. Line Intercept Transect June 2016

Coral bleaching occurring at a depth of 3 meters caused some clusters of massive corals to experience bleaching. Coral bleaching as seen in Figures 5 and 6

Fig.5. Bleaching Coral on Lembongan Island

Fig.6. Bleaching Coral on Lembongan Island

Observations in November 2016 showed a recovery in coral bleaching in June 2016

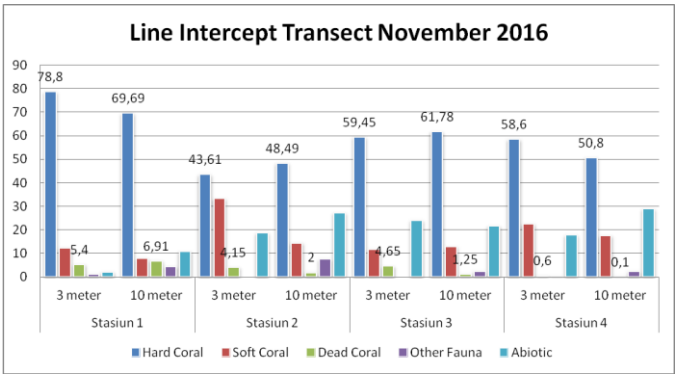

Fig.7. Line Intercept Transect November 2016

The result of line intercept transect showed closure between 43,61% to 78,8% at depth of 3 meter, while in depth 10 meter ranged from 48,49% until 69,69%.

3. Coral Bleaching Factors in 2016

Human activities, primarily the emission of greenhouse gases from the combustion of fossil fuels (coal, oil and gas), are driving climate change. The changing climate is putting the Earth's biodiversity and ecosystems at very high risk of serious impacts this century (Gattuso et al. 2015)

Coral reef growth is strongly influenced by such limiting factors:

1. Temperature (Controlling Factor)

Record global ocean temperatures associated with a severe El Niño event, marked by up to 3°C warmer-than-average sea surface temperatures in the central and eastern equatorial Pacific Ocean over the past year or so, on top of the long-term warming trend, prompted NOAA to declare a global bleaching event in October 2015, because the phenomenon was evident in all three ocean basins, the Indian, Pacific, and Atlantic/ Caribbean (NOAA 2015a; Hoegh-Guldberg 2016). A global event such as this has only been declared twice before - in 1998 and 2010 (NOAA 2015a; Wake 2016).

The most optimal coral reef development if the average annual temperature is 23-25^{0}C and close to tropical conditions (Nybakken, 1992., Lalli and Parsons, 1993). But at 25-30^{o}C temperature temperatures coral growth can still live optimally (Nontji, 1987). Temperature has an important role in limiting the distribution of coral reefs, since hermatypic corals as the main constituent component have optimal growth at an average temperature above 200C throughout the year (Barner and Hughes, 1990). Therefore, coral reefs are not found in temperate climates especially in cold areas.

Bleaching is not the only threat to coral reef habitats and its impacts cannot be viewed in isolation from the legacy impacts of past practices and current pressures. These pressures include severe tropical cyclones, coral predation by the crown-of-thorns starfish, poor water quality and direct use

2. Ligh (Limiting Factor)

According to Nybakken (1992), coral reefs have a compensatory point of reduced light intensity up to 15-20% of the surface at a depth of 25 m or less, in order for optimal development in the waters. Light together with zooxanthellae is an environmental factor that controls coral vertical distribution and coral reef calcification rates by individuals from each colony (Supriharyono, 2000).

Light is needed for photosynthesis of symbiotic algae ie zooxanthellae whose production is then donated to coral animals that become its host. Without sufficient light, the rate of photosynthesis of zooxanthellae is reduced and at the same time the coral reefs to deposit calcium carbonate and reef form will be reduced (Notji, 1987, Nybakken, 1992).

3. Sedimentation and Turbidity (Controlling Factor)

According to Supriharyono (2007), there is a sediment known as carbonate sediment, which is sediment derived from coral erosion. Physically or biologically called bioerosion.

Bioeorsi is usually done by marine animals, such as sea urchins, fish, starfish and so on.

The existence of these sediments, both terrigeneous sediments and carbonate sediments, causes the waters around the coral reef to become turbid, especially after major rain or storms, and this can affect the life of the reef.

Sedimentation directly and indirectly affects coral growth because of the amount of energy released to dispel this sediment from the polyp surface (Supriharyono, 2000). Increased sediments will kill corals and additional nutrients can cause corals overgrown with algae that are competing corals in life (Anonymous, 2001). This is because excessive sediments can kill corals, because the oxygen dissolved in water cannot diffuse into the coral polyps (Dahuri et al., 1996)

Sediments in sea water columns can greatly affect coral growth, or even cause coral mortality. High nutrient content of river flow can stimulate the growth of toxic algae. This leads to the growth of other algae that not only utilize solar energy but also inhibits coral larvae colonization by overgrowing the substrate which is the site for coral larvae (Burket et al. 2002)

Turbidity of water can reduce the intensity of incoming light and can cause disturbed until the death of coral reefs (Supriharyono, 2000). If the water is cloudy, the corals can only grow at a depth of 2 meters. Whereas in clear blue waters around the oceanic islands, corals can grow to depths of more than 80 meters.

5. *Pollutants (Toxic Factor)*

Oil spill causes reduced coral species colony, reproduction rate, number of ovaries per polyp, number of planula produced per individual, and decreasing number of successful planula attached to the substrate (Supriharyono, 2000). This is because the oil layer can reduce the intensity of sunlight that coral needs in the process of photosynthesis.

6. Protect Coral Reefs

The fact that bleaching is having greater and greater impacts example bleaching and mortality over time is strong evidence that corals are not able to acclimatize adequately to the rate of increase in ocean temperature.

These ecosystems protect coastlines from storms and erosion and provide habitat, spawning and nursery grounds for 25% of marine species, including many economically important fish. Coral ecosystems also provide jobs and income to local communities from fishing, recreation, and tourism, supporting livelihoods of 500 million people globally. Loss of coral reefs potentially puts an astounding $1 trillion at risk globally (Hoegh-Guldberg et al. 2015).

The future of coral reefs depends on how much and how fast we reduce greenhouse gas emissions now, and in the coming years and decades (Hoegh-Guldberg 1999; Hoegh-Guldberg et al. 2007; De'ath et al. 2012). Global emissions must be trending downwards by 2020 at the latest.

Renewable energy investment and implementation must therefore increase rapidly and most of the known fossil fuel reserves must remain in the ground (McGlade and Ekins 2015).

One way to protect corals is to learn the coral bleaching phenomenon. The more data will be more and more references that can be used for anticipation. Written data and facts can be used as a reference in learning on campus.

This research can be used as teaching material in marine biology. To strengthen the understanding of the factors that affect coral bleaching. It is also important for the management of sustainable coral reef areas. Coral bleaching can be a sign of environmental degradation that disrupts coral growth.

IV. CONCLUSION

Based on the results, it can be concluded that; (1) live coral cover on Lembongan Island has percentage between 43,61% to 78,8% at depth of 3 meter, while in depth 10 meter ranged from 48,49% until 69,69%, (2) coral bleaching occurred at Station 2 on the 3 meter deep where 27.51% Acropora branching. Station 4 at 3 meter depth occurred coral bleaching at: 17,72% Acropora branching, 8.3% branching rock, and 6.8% Coral massive, (3) coral bleaching on Lembongan Island is caused by Climate change and its associated impacts and (4) observations in November 2016 show a recovery in coral bleaching in June 2016.

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Do Japanese Mothers Talk Differently to Daughters than Sons?: A Study of *Bikago* (Beautified Speech)

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***Abstract*—Japanese is well known for its gendered speech style which denotes the sex of the speaker. These speech styles are reinforced throughout their formative years. This study analyzed (1) how Japanese Mothers in Bali use *bikago* (beautified speech) especially in child-directed speech; and (2) to investigate the factors that influence the use of *bikago* by Japanese mothers when talking to their daughters. The research was conducted between January until February 2016, involving two Japanese mothers who stayed in Bali with their children. The data were collected through observation by using tape- recorder. The data were then analyzed qualitatively and revealed that (1) Japanese mothers tended to use bikago more frequently when talking to their daughter as compared to when they spoke to their son, and (2) mothers used *bikago* when talking to their daughters to boost the daughter's refined language skill.**

***Keywords*—bikago, Japanese language, Japanese mother, refined language skills.**

I. INTRODUCTION

Teaching civility is a very important thing for children. Children are generally conditioned to say politely through a process of socialization. This socialization can be in the form of language use and socialization to use language. At a time when children acquire language, they also get an understanding of how to use the language. In Japan, mothers have started to teach their children polite expression very early. Japanese mothers also generally teach their children about what they have to say [1].

The frequency of the use of honorifics is the highest among women of middle-class and above. The desire of women to raise their social status by using a variety of forms of honorifics is achieved by using higher frequency of prevailing norms is sometimes arguably excessive. They want to show that they were raised properly and urbane. The use of excessive honorific language diversity is generally limited to women, with the exception of speech on a variety of a language used by salesman guy. The use of honorific language diversity has two different dimensions of demonstrating respect for others and showing off the social status of the speakers. [2]. The level of tolerance between men and women in the use of both honorific prefixes is different [2].

In Japanese honorific system, there are so-called *bikago* ('beautification' +'words') which are used for making the utterance sound "refined" or "elegant". These are classified either as a third subcategory of referent honorifics or as a separate category [3].

Bikago are frequently used in child-directed speech. This is the reason why children use many bikago in both polite and casual language. For example, children said *osoto de asobu no ka naa?* ('Are they going to play outside?)' when she saw a picture of two mice carrying knapsacks in her storybook. Children also use words such as *gohon* 'book', *ouchi* 'house', *omise* 'store', *oryoori* 'cooking', *oshigoto* 'work' and *ohashi* 'chopsticks'. While the standard form of that words are *hon, uchi, mise, ryoori, shigoto,* and *hashi.*

In many cases, children have learned the *o-* or *go-* form as the standard form of the word and do not use the word without corresponding honorific prefixes. In other words, they do not intentionally use these forms as honorific forms, but simply as the standard form. In general, girls tend to use beautification honorifics more frequently than boys. This pattern mirrors adult usage. Excessive use of these forms by women, especially mothers and preschool teachers (e.g., oekaki 'drawing', okutsu 'shoes') has been the target of public criticism. Some women in their effort to sound refined and polite overuse beautification honorifics, using unnecessary and incorrect forms [4].

In particular, the so-called "overuse of the *o-* honorific prefix" probably has little to do with "a Buddhist respect for everyday things", as some have claimed; it would perhaps be possible to imagine a special respect for tea (*o-Cha*), but then why not for powdered tea (*Matcha*), fine-grade tea (*Gyokuro-cha*), or, say, for *Shoyu* or *Miso*? And why would farts always be referred "respectfully" as *o-Nara*, and (low-prestige) effeminate men as *o-Kama*?

It's more reasonable to think that these words are simply spoken like this, with a conventional neutral prefix *o-*. In other cases (like the infamous *o-Biiru* "beer") the *o-* isn't mandatory, but rather than expressing respect or politeness, it reflects at best a desire to speak elegantly (that is the reason why it is called *Bikago*, which means beautified language) [5].

Bikago in the form of honorific prefixes *o-* and *go-* serve to express the honour, attitude of humility, and modesty owned by the speakers. Although both men and women can use this

feature, previous research indicates that these forms more often appear in the speech of women [6].

The use of these prefixes could to show respect to the partner or the person who is being spoken to and also to beautify speech. On the phrase "*sensei no oheya*" (room belongs to the teacher), the prefix *o-* functions to show respect. Whereas, in the phrase "*watashi no oheya*" (my room), the prefix *o-* serves to beautify speech. Women generally use beautification honorific or this beautified honorific utterance more often than men do [7]. There are also some beautified nouns, which are specifically used only by women. A female speaker may sometimes refer to *mizu* (water) as "*o-mizu*" just to show her cultural refinement, compared to more blunt male speech patterns. [8]. Another word with honorific prefixes like osushi "sushi" is also frequently used by women for refinement [9].

Utterances can be made more polite by adding the prefix *o-* in front of a noun. For example, *otenki* (weather) will make the nuances of the utterance to be more polite than the word *tenki*. The prefix *o-* is said to be the characteristic of women's utterance [10].

For example, in the phrase *sensei no go-hon* (books belong to the teacher), the use of the prefix *go-* by Japanese women speaker is something compulsory. But if it is used by men it will sound excessive, even feminine, unless the teacher is in a position of superior or the man is in a very formal situation. Prefixes *o-* and *go-* have the same function as well as the same level of modesty, but they are attached at different words and cannot be converted to each other.

The prefix *o-* is generally attached to words in the original Japanese. The examples are the word *okome* (rice), *okane* (money), and *osake* (sake). Whereas for the words that come from China are attached with the prefix *go-*. For example, *gokazoku* (family), *gokyouryoku* (cooperation), and *goshinsetsu ni* (kindly) [11].

However, some words do not belong to these rules. For example, the word *denwa* (telephone) which is not the Japanese word, commonly beautified with the prefix *o-*, hence it becomes *odenwa* instead of *godenwa*. Conversely, there are also Japanese words beautified with prefix *go-*, for example, in the word *goyukkuri*. Words in a foreign language are not generally beautified this way. However, in some words that can be attached with a prefix, they are typically added with the prefix *o-*, i.e. *otoire* (toilet), *osoosu* (sauce) and *otabako* (cigarettes).

Honorific is considered prestigious linguistic form and is associated with a high social class. Women generally have a desire to show themselves as persons with good manners by indicating a higher social class than their actual class is. This is the trigger for the use of the prestigious linguistic form redundantly by women [12]. There is a possibility that *bikago* used by Japanese women is a part of their parenting style which they inherit from their mother. This raises the question, what is the dominant form of linguistic *bikago* used by women affected by the difference between language socialization of *bikago* between mothers who interact with daughters and those who interact with sons? What are the factors that influence the use of *bikago*?

II. METHOD

The research approach used in this research was qualitative research approach. This study was conducted on Japanese mother who lived in Ubud District, Gianyar Regency, Bali. The corpus of data in this study was the child-directed speech between mother and their children. The name of the subjects was hereon made up for confidentiality and in this research will be called as Tomomi (36) and Mikage (45). Tomomi has a daughter and Mikage has a son.

Their conversations with their respective family were recorded and then given a code based on the location of the study as well as the order of taking the recorded conversation. The duration of per-subject recording files varied, but remained within the same range of 2.5 hours / subject. Data analysis was performed in Constant Comparative Analysis. The results of data analysis are then presented using formal and informal methods.

III. RESULT AND DISCUSSION

The results of this study showed that the frequency of the use of the prefix *o-* and *go-* by Tomomi when talking to her daughter and Mikage when talking to her son were different. Tomomi used the word with the prefix *o-* and *go-* for 54 times while Mikage used them 24 times. The results of the data can be seen in table 1.

TABLE 1-FREQUENCY OF USE OF WORDS WITH THE HONORIFIC PREFIXES *O-* AND *GO-* WHICH INCLUDED THE BEAUTIFICATION HONORIFICS

No	Words	Tomomi	Mikage
1	***otomodachi***	2	
2	***omizu***	1	
3	***omatsuri***	1	
4	***onaka***	2	1
5	***oimo***	4	
6	***onegai***	4	1
7	***ohana***	4	
8	***okaasan***	4	2
9	***otsukuri***	1	
10	***otsutae***	1	
11	***osusume***	1	
12	***okyakusama***	13	
13	***okuchi***	1	
14	***omago***	1	
15	***oisogashii***	1	
16	***Ohiru gohan***	1	
17	***omukae***	1	
18	***goishoni***	1	
19	***otegami***	1	
20	***okuni***	1	1
21	***otoosan***	2	2
22	***oyasumi***	4	1
23	ojisan		1

No	Words	Tomomi	Mikage
24	***ohanashi***	1	1
25	***oshigoto***	1	2
26	***okochan***	1	
27	***oharai***	1	
28	***omiseya***	1	
29	***okaeri***	2	
30	***oshougatsu***	3	
31	***osoba***	1	
32	***omochi***	1	
33	***obaachan***	1	
34	***osewa***	1	
35	***okyuuryou***	1	
36	***oneesan***	1	
37	***omiyage***	1	
38	***gomanzoku***	1	
39	***ouchi***		1
40	***okaerinasai***		1
41	***okane***		2
42	***otetsudai***		1
43	***omanjyuu***		1
44	***ohisashiburi***		1
TOTAL		54	24

There are only three words found using the honorific prefix go- i.e. *gohan*, *goishoni*, and *gomanzoku*. It could be inferred that the variations of words with the honorific prefix *o-* are more widely used by the subject than variations of words with the honorific prefix *go-*.

In addition to using polite utterance, respect to the partners can be expressed by using a noun or adjective that is attached to honorific prefix *o-* or *go-*. However, in some words, these honorific prefixes have become too ordinary. Hence, such words lose the sense of honor and the prefix *o-* or *go-* is considered part of the words. For example, the word *ocha* (tea) is usually used with the prefix o. Its own base form i.e. *cha* is currently rarely used [5].

Of the many number of words with the prefix *o-* and *go-* that occurred during data collection, the data were reduced to only words that include beautification honorifics. The results of the data reduction can be seen in table 2.

TABLE 2-FREQUENCY OF USE OF BEAUTIFICATION HONORIFICS

No.	*Word*	*Tomomi*		*Mikage*
1	***otomodachi***	***2***		-
2	***omizu***	***1***		-
3	***oimo***	***4***		-
4	***ohana***	***4***		-
5	***oyasumi***	***4***		-
6	***osoba***	***1***		-
7	***omochi***	***1***		-
Total		***17***		***0***

The following discusses the use of *bikago by Tomomi and Mikage.*

A. Tomomi

Tomomi is a Japanese woman from Tokyo, 36 years old who married a Balinese man, whom she met while studying arts in Bali. Now Tomomi has already had two daughters aged 4 years and 6 years, Natsumi and Ayuka. Tomomi lives in a rented house in Ubud area together with the two children.

Tomomi's husband works in different city so he is at home only in weekends. That is why Tomomi has the bigger role in language acquisition of her two daughters. The data of *bikago* used by Tomomi can be seen at data (1) and (2).

(1)

Tomomi : これ食べていいよ。**おいも**。
おいも大好きなの？
kore tabete ii yo. ***oimo****.* ***oimo*** *daisuki na no*
You may eat this. Sweet potato,
you like it very much, don't you?

Ayuka : うん。
Un..
Yes

(C2.18)

Data (1) shows the conversation of Tomomi with her daughter Ayuka when they were in a cafe. Tomomi offered sweet potato, which Ayuka liked very much. Tomomi used the word with honorific prefix *o-* i.e. *oimo* (sweet potato). In informal situations, Japanese generally only call sweet potato with *imo*.

(2)

Natsumi : からい!!
Karai
Spicy!

Tomomi : 何をやってるかぜんぜんわかんない。
どうしたの？なに？からいっていうこと。
じゃ、**お水**のめばはいいでしょう。
食べる よね。
Nani o yatteru ka zenzen wakannai.
Doushita no? Nani? Karaitte iu koto.
Ja ***omizu*** *nomeba wa ii deshou. ..taberu yo ne.*
I totally don't understand what you're doing.
What's up? What is it?
You say spicy. It is better for you to
drink water. Just eat!

(C2.5)

Data (2) shows the conversation of Tomomi with her younger daughter Natsumi when they were in a dinner, Tomomi rebuked Natsumi who said that the food was spicy. Tomomi then asked Natsumi to drink water. Tomomi used the word *omizu* (water) that is derived from the word *mizu* with the prefix *o*-. In informal situation, Japanese generally call water only with the word *mizu*.

(3)
Ayuka : あっ!
Aak!
Ah!

Tomomi : ねえ、無駄遣い
しないで、おはな
Nee. muda tzukai shinaide, ohana
Hey, don't waste the flower

(C2.18)

Data (3) shows the conversation of Tomomi with her daughter Ayuka when they were in a dinner. Ayuka took up a flower from a vase. Tomomi told her not to do it again. Tomomi used the word *ohana* (flower) that is derived from the word *hana* with the prefix *o*-.

In Japanese, the uses of honorific used by women to their daughter are usually aimed at familiarizing their daughters to listening to polite and lovely words [4]. In this case, Tomomi used the honorific prefix *o*- reflected her effort to educate her daughter about the language use and to familiarize her daughter about politeness in Japanese culture and language. Further, related to [4] opinion's about the relation between the use of honorific and the effort to produce a good impression about their social class, Tomomi's choice of using honorific prefixes can also be seen as an effort to show that she had been raised well and that she can raise her daughter well. This can be related to the role of a mother in Japanese culture as education mother (in addition to the education mother, there is actually another term i.e. *kyōiku* mama which translation literally is the same but the term *kyōiku* mama has a pejorative meaning as a mother who forces her children in order to have achievement in the academic).

Tomomi has the bigger role in nurturing children because her husband often has task out of town. Tomomi said she wants her daughters to get used to the use of words with the honorific prefix. At a young age (4 years and 6 years) Tomomi's daughters have been socialized with polite language diversity, i.e certain words attached with honorific prefixes *o*- and *go*-. By making her daughters get used to hearing those words, she hopes her daughters will mimic and use the polite words in everyday conversation. This can be related to women as agents who maintain the languages in which in this case Tomomi maintained the use of honorific prefix by making her daughters get use to hearing it.

B. Mikage

Mikage is a 45 years old woman from Hokkaido. Mikage and her husband live separately. Her husband is Japanese man who lives in Japan together with the daughters. Meanwhile, Mikage and her son, Hiroki, live in Ubud, Bali. They both have restaurant business. Mikage opens two Japanese vegetarian cafés in Ubud that also provide bread and coffee.

When interacting with her son, Mikage did not appear to use honorific prefixes *o*- and *go*-. It could be assumed that Mikage does not get her son to use the honorific prefix because Japanese men generally do not use it in the informal realm of as in the realm of family. The difference between the use of honorific prefixes *o*- and *go*- by Tomomi and Mikage is quite interesting because it reflects the diversity in the use of women language (*joseigo*) which includes the use of honorific prefixes in informal situations that is conditioned to girls but not to boys.

This can be associated to Mikage's background. In Ubud, Mikage only lives with her son, Atsushi. Her husband lives in Japan. Automatically Japanese adult who often communicates with Atsushi is his mother the most. If Mikage uses linguistic features that are included in *joseigo*, then it is likely that Atsushi will imitate Mikage and will sound feminine. To avoid this, Mikage does not use words with the prefixes *o*- and *go*- that serve to beautify the word (beautification) at all.

IV. CONCLUSION

The results showed that (1) Japanese mothers tended to use *bikago* more frequently in daughter directed speech. (2) The factor that influenced the use of *bikago* was the mother's attempt to boost the daughter's refined language skill. While in the mother talk with her son, she does not get her so to use *bikago* in formal situation because she does not want her son sounds feminine.

Japanese mothers tended to use *bikago* more frequently in daughter directed speech. Second, the factor that influenced the use of *bikago* was the mother's attempt to boost the daughter's refined language skill. While in the mother talk with her son, she does not get her so to use *bikago* in formal situation because she does not want her son sounds feminine.

Words that are beautified or experiencing beautification with the addition of the prefix *o*- or *go*- are found. These words are different from the words with prefix *o*- and *go*- that are already commonplace in use. Men and women can use these words in formal situations. The point that needs to be underlined is the characteristic of Japanese women's language diversity that makes it different from the men regarding the addition of a prefix. What makes the different is women also use this linguistic feature at everyday speech, not only in formal contexts, for example on the use of the word with prefix *o*- on the conversation between Tomomi with her daughters.

Since the majority of words with the honorific prefixes *o-* and *go-* are already commonplace used daily hence it is already considered to be part of that words. The emergence of the word itself becomes dependent of the subject. However, words that are beautified or experiencing beautification with the addition of the prefix *o* or *go* are found. These words are different from the words with prefix o and go that are already commonplace in use. Men and women can use these words in formal situations. The point that needs to be underlined is the characteristic of Japanese women's language diversity that makes it different from the men regarding the addition of a prefix. What makes the different is women also use this linguistic feature at everyday speech, not only in formal contexts, for example on the use of the word with prefix o on the conversation between Tomomi with her daughters.

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Developing Creative Economy for Community Learners in Supporting Tourism in Tembok and Abang Village, Bali

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***Abstract*—Community group learners are a community group that sets an example and deserves to be given a priority in a program for strengthening and extending economy, especially in Bali province. Departing from this idea, this study was aimed (1) to produce an innovative design for handicrafs (creative economy) for community group learners which matches their existing potentialities, (2) to produce a creative economy strategy at a larger scale. The results of this study showed that the craftsmen had been able to produce various handicrafts such as laptop baggage, *sokasi* (bamboo basketwork used for holding rice), ballpoint stand, bamboo basket or tray for keeping offerings with a variety of designs. Community learners were able to develop product to meet the market conditions and demands and were able to develop a larger network, with the local government, universities, and businesses.**

Keywords—community learners, creative economy, tourism

I. INTRODUCTION

Suparwoko states that a synergy between creative economy and tourism sector is a model for developing economy which is potential enough to be developed in Indonesia, including Bali province. To develop creative economy as a motivating sector of tourism there is a need for creativity, that is, by creating outlets for creative products in a strategic location and near a tourist location. The outlets can be counters or handicraft center which are not just places for buying souvenirs , but also places to see the process of making them and even tourists can participate in making them [1]. Sujana states that the development and improvement of creative economy in a larger scale involve community learners from other villages. In addition, the products produced by them have been accepted by partner businesses as ready to export commodities [2 and 3].

In 2010, April [4] did a study about the increase in the productivity of fan group through training on graphic design aiming at improving community members' ability in creating various designs through computer. Hence, the community of craftsmen will be more creative, not only in designing drawings with computer technology but also understand how to draw good and interesting drawings to be uploaded in the internet through web. Based on the result of a research done by Heni, there are two classifications of woodcraftsmen groups, namely applied craftsmen group (furniture and household tools) and non-applied one (souvenirs and ornaments) [5].

Creative economy is one of the supporting and very important factors which form moving spirits in tourism sector. As firmly stated in Article 1 No. 2 Act No. 10 of 2009 tourism is a variety of tourism activities and is supported by a variety of facilities and services provided by the community, business people, the central government, and local government. Tourism is one of the needs in human life. It is done by individuals, families, groups, and social organizations. In general, conventional tourists visit natural tourist objects, cultural objects, and objects for special interests. Tourist objects are supported by three main elements, namely (1) main tourism superstructure which comprises travel agents, transportation, restaurants, tourist objects and tourist attractions, (2) supplementing tourism or facilities to supplement tourism facilities which comprise recreational and sports facilities and public facilities such as main roads, bridges, electricity, airport, telecommunication, clean water, and harbors, (3) supporting tourism superstructure which comprises night life, entertainment, mailing service, and souvenir shops.

The Department of Commerce of the Republic of Indonesia formulates creative economy as an effort to develop economy in a sustainable way through creativity with an economic condition which is competitive and has renewable resources [6]. The Department of Commerce identifies at least 14 sectors which belong to creative economy. They are (1) advertisement, (2) architecture, (3) art products market, (4) handicraft, (5) design, (6) fashion, (7) film, video, and photography, (8) interactive games, (9) music, (10) performing arts, (11) publication and printing, (12)computer and software services, (13) radio and television, (14) research and development.

Autonomous business literacy is the basic ability or skill which is taught through productive and livelihood training which can improve the literacy and income of the participants, both as individual and groups as a way to strengthen the literacy and at the same time reducing poverty.

One Village One Product (OVOP) is an effort made by the government to increase added value of the local products

which are considered superior in the effort to increase the prosperity of the community through cooperatives or small and medium scale businesses. The criteria of the OVOP program are : (a). It is a product which is considered as superior product of the local area that has been developed from generation to generation; (b) It is a special product of the local area; (c) It is based on local resources; (d) It has an appearance and quality of a product that conform to the market demand, (e) It has a market niche, both domestic and international; (f) It has a high economic value; (e) It can become a source of income for the local economy.

Relatively a lot of the community learners work in creative economy sector especially in handicraft which needs and is urgent to be considered.

II. METHODS

This study used qualitative research design. This study was conducted in two villages, namely, Tembok village, Tejakula district, Buleleng regency, and Abang village, Abang district, Karangasem regency with the subjects especially focused on community learners. The data collection was done through observation, interview, documentation. The observation was conducted on process of making handicrafts conducted by the community learner. Then, it was continued into interview where 5 respondents were involved in this method. The last method, documentation, was conducted by taking pictures of the process and the handicrafts resulted by the community learner. All of the data in this study was of qualitative type where these data was analyzed by using Huberman and Mile's model analysis [7] which contains data reduction, data display, data interpretation, and drawing conclusion. Among all the data, almost all of them were used in this study. Then, the data was described qualitatively. Due to the next step, the data was interpreted to get the meanings of it. Finally, the conclusion of the data could be drawn.

III. FINDINGS AND DISCUSSIONS

The creative economy products of the community learners which have a great potential to be developed into superior products through One Village One Product in the two villages, namely Tembok village and Abang village can be described as follows.

A. Ingke Lidi Pohon Lontar (Palm Leaf Rib) in Tembok Village

One of the creative economy activities done by the community learners that become a reliable product in Tembok village, Tejakula district, is ingke lidi pohon lontar (palm leaf rib) handicraft. Initially, the motif and design of inke lidi lontar in Tembok village were monotonous and the product was only sold in the local market. In terms of product it did not have a special characteristic which was different from that from other villages. In rainy season, ingke from Tembok village changed color into yellow since it did not have enough sunlight. This is because in rainy season the temperature drops and it becomes humid. This causes ingke to become infested by mold. A good strategy to heat palm leaves is to put them in a room at a relatively high temperature.

Hence the researchers together with community learners developed new motifs and designs which are more varied so that they have a higher price and they are not only for local consumption.

The research team also offered a chemical substance for the preservation of ingke which has no side effect. In addition, some anti-bacteria substances were also tried to preserve ingke handicraft in rainy season so that it can still be used and is able to become a good material for ingke handicraft. After giving them a training and capacity building in the matter that is related to ingke (palm leaf rib) handicraft products in Tembok village, Tejakula village, became more interesting in its appearance, color and flexibility compared to other places. In addition, ingke handicraft has also been extended to the production of other products such as lampion, a container to hold cakes, etc. Actually, creative economy in Tembok village is very potential and is supported by the availability of its raw material. In addition, it can be used as a tourism souvenir from North Bali and East Bali.

What follows are various photographs of ingke handicraft products made by the community learners from Tembok village.

Fig. 1. ***Ingke*** *handicraft products made by the community learners from Tembok village*

B. Coconut Shell Handicraft in Abang Village , Karangasem

In Waliang village, Karangasem, coconut shells can be used as the materials for making various handicrafts both functional and decorative ones such as fruit container, tamas (a kind of plate , sokasi, etc. They are bought by many people for their good appearance and because it is environmentally friendly to use them. The use of coconut shells for making various handicrafts helps in preservation of the environment since it reduces waste from coconut processed product production, especially in Karangasem where many coconuts grow. Thus, theoretically, the coconut shell handicrafts should be produced at a high level of continuity and they still can develop at a larger scale.

To obtain the raw material the craftsmen and craftswomen do not need to damage the environment since in Bali, especially in Karangasem there are so many coconut trees that they do not have any problem with the raw material. Although in practice sometimes the raw materials have to be obtained from Klungkung. Because of the abundance in number and the coconut shells have not yet been processed optimally, before the coconut shells were only used as fire woods.

One of the craftsmen in Abang district is I Komang Eka Lestari who is the pioneer in developing the coconut shell crafts. Outside Bali there are many coconut shell crafts but the coconut shell crafts from Waliang village has its own unique characteristics. The coconut shell crafts in this area are processed by plaiting the coconut shells. Before that the coconut shells are cut into small circles like ancient Bali coins (uang kepeng). When the plaiting is finished the crafts are painted with varnish to make them shine and the products last long.

Fig. 2. Coconut shell handicrafts from Abang village, Karangasem

IV. CONCLUSION

The creative economy of the community learners has developed well since it has been managed well, with the touch of people from a university, and the support from the existing potentials in the village. Since it is supported by the village potentialities, it is getting more and more developed. At the initial stage innovations and design development tended to be monotonous, but after a training and capacity building were implemented, and after the artistic touch from the university, at last, a design innovation could be done. The development of an innovative design can add the selling value of the product made by the craftmen. In addition, a broader marketing strategy has been able to be used by the craftsmen with the help from the researchers. Through a limited group discussion, a memorandom of understanding could be signed by the craftsmen and the local government, which was facilitated by Universitas Pendidikan Ganesha. Even group consolidating has been organized by the craftsmen to look for the possibility to obtain assistence in the form of facilities and marketing from the local government. The dominant handicrafts produced are *ingke*, lamp stand from palm leaf ribs, photo frame, and a container to hold offerings from coconut shells. Some products made by the craftsmen have been displayed in exhibitions with local and national scales.

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Implementing *Sadguna* –Based Character Teaching Model in Civics Education at Junior High School Laboratorium Undiksha

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***Abstract*—This study was aimed at; (1) analyzing and formulating a synthetic local genius-based character teaching model and (2) analyzing a limited trial result of local genius-based character teaching model. This study was an adapted classroom action research using observation guide, interview guide, learning achievement test and documentation study as the research instruments. The syntax of this local genius – based character teaching model was developed based on *sadguna. Sadguna* comprises *sandhi, jana, sana, srya, wirgha* and *wisesa.* This local genius-based character teaching gives more stress on cooperation process to produce knowledge, attitude, and moral skill. The results showed that the syntax of the model is very easy to apply and to understand by the students because it is very familiar for them. Students' learning achievement also showed an increase in moral knowledge and moral attitude.**

Keywords—character teaching model, sadguna based

I. INTRODUCTION

One of the teaching practices that are considered capable of developing students' moral awareness is Citizenship Education. Through Civics Education, the students can feel, internalize and practice moral behaviors at school empirically. The students will train their awareness, honesty, responsibility, care, creativity, cleanliness and healthful behavior for themselves and the environment. However, in practice, Civics Education is still far from expectation. Deny's work about the integrity in the formation of national identity to develop civic culture in Medan, showed that the outcome of Civics Education was still oriented toward cognitive ability by ignoring moral skill which should have been the key to the success in Civics Education [1]. Lasmawan's work showed that the teaching process in Civics Education at the junior high school level in Bali province was still expository by relying on the teacher's authority and as the consequence, it cannot attract the students' interest, nor can stimulate the students' creativity and skill to participate in solving Civic problems that occur in the society [2]. This finding is supported by various cases and real events in the society as shown by some examples with students as their main actors. The case of demonstration which ended in anarchical action, fights among students from different schools, drug abuse, free sex, behaviors that violate traffic regulations, norms and values, all show that uncivilized culture is the concrete evidence of the still low level of understanding and low level of moral behaviors of the students.

This condition is assumed to be due to the teaching model used so far for teaching Civics Education which is not capable of training, conditioning and developing character in the teaching and learning process. Some existing innovative teaching models do not match the culture of the teachers nowadays. This is in line with Joyce & Weil' statements stated that an urgent problem in teaching is teaching model which contains syntax, social system, principles of reaction, support system and nurturant effect [3]. According to Yani, character education must move from knowing toward doing or acting [4]. Thus, the success of character education is very much dependent on the presence or non-presence of knowing, loving, and doing or acting in the implementation of character education, which would later be reflected in the way of how the graduates live in the community, in the state and the nation. Thus, in addition to the ability and the skill of the teacher, teaching model will also become a main instrument in determining success in the teaching of Civics Education and developing character as well as the idealized nation's moral values.

Some efforts have also been made by educators in Indonesia to develop a teaching model and alternative method of teaching based on community local, spiritual and cultural approach. First, Suastra, has developed local culture-based original science [5]. In line with that, Kusnadi conducted a research developed learning cycle model and teaching based on tauhid (the doctrine of One-God–ness) in Geography, improved the students' love and sensitivity to their geographical environment and their ability in applying geographical concepts in solving geographical environmental problems [6]. Sukadi also conducted similar research at SMA 1 Ubud on the use of the ideological foundation of Tri Hita Karana in developing the school vision, missions, and srategic plan showed very good results to improve cultural insights and Hinduism of the students in the school environment [7].In connection with that, it is very urgent to do the development of learning models based on the values of local wisdom that is easy to be implemented by teachers and easily understood by students. In this paper, we will examine in depth and comprehensive about how the syntax (steps) of character-based learning model and the effectiveness of the application of

syntax of character-based learning model in the learning of Junior High School Student Education of Ganesha University Education Laboratory.

II. METHODS

Methodologically, this research used a combination of qualitative and quantiative (descriptive statistics) approach. There were five techniques of data collection used in this research, i.e., interview, observation, moral knowledge test, value inventory, and moral skill observation guide. For the interview, the researchers developed an instructured interview guide [8]. Therefore, the observation were developed unstructured observation guide related to various activities of classroom learning and students' activities in learning process [9]. To obtain information on the the students' learning achievement an objective test of multiple choice type was given. To obtain data on moral development, moral attitude inventory and self evaluation format on moral behavior were developed.

The sample consisted of Pancasila and Civics Education teachers and the sixth grade students of Sekolah Menengah Pertama Laboratorium Undiksha. The class of Sekolah Menengah Pertama involved in the development stage were selected purposively in accordance with the focus of the reserach. Data analysis was done qualitatively, especially, for the result of interview and observation. On the other hand, moral knowledge test, value inventory and observatgion result of the students' moral skill were analyzed by using descriptive statistics.

III. FINDINGS AND DISCUSSIONS

A. Sadguna – Based Character Synthetic Teaching Model

The findings in the library research and empirical study showed that the syntax of chartacter teaching model developed in this study has to conform to Balinese cultural values (*sadguna*) in accordance with the curriculum needs being developed currently. The steps (syntax) of *Sadgun* – based character teaching model were as follows.

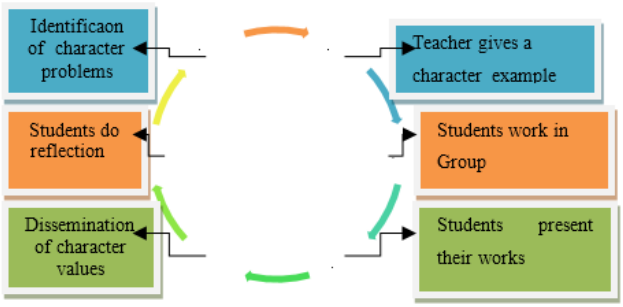

Fig. 1. Sadguna–based character teaching model Syntax

Sadguna consists of *sandhi* / initiation which can be defined as the process and ability to get out from a difficulty in life or the ability to identify and solve problems in life. both experienced by oneself and experienced by others. *Jana* /example is the ability which can make others imitate ideas, words and behaviors. In jana process, the teacher will give an example of a good character which is worth imitated by all people to the students to reach goodness. *Sana*/ training is the ability to always be able to adjust oneself to the environment according to the situation and condition in the society. In this *sana* stage, the students will be divided into groups to train, to adjust themselves and to condition themselves to their peers in the groups in solving character degradation problem in the socieity. *Srya*/ influencing is the ability to get sympathy and to be loved by other people because one has positive behaviors. In this *srya* stage, the students present their group works to get sympathy from their friends and influence other students that their development can be accepted and approved to be implemented . *Wigrha*/ cultivation is the ability to influence others and become influential people because their behaviors conform to good behaviors. At this stage, the students will socialize and disminate their works to others, so that they are able to be influential figures in the school community. The last stage is *wisesa*/reflection is the wise attitude and behavior and the ability to have authority and do good behavior easily. At this stage, the students will do a reflection into their learning experiences and do an evaluation of what they have achieved in the learning process. To possess wisdom and authority, a person will always do a self-reflection into his or her ideas, attitude and behaviors so that he or she can do real good behavior, since wisedom is an attitude and behavior by oneself, not demanding others or other organizations to do the good deeds [11]. The syntax of *sadguna* based character teaching model above was developed in the teaching materials by adjusting to competence standard and basic competences of Civic Education , Local genius-based Civics Education. In detail, the syntax of *sadguna*-based character teaching model was incorporated into the lesson plans for Civics Education, so that it can be easily practiced by the teacher in the teaching practices. The syntax of this local genius–based characer teaching model was then improved through a research process with the design adapted from classroom action research. To measure the validity of this local genius-based character teaching model, two methods were used. The first method was through expert judgment to find out the match of the model with the teaching theories and model readibility. The second method was through empirical testing to find out the weaknesses of the model that need to be improved as well as the model practicality in the implementation process through teaching practices by the teachers. Experts and practitioners were needed to know the need of the developed teaching model in terms of its validity, meanwhile in term of its practicality and effectiveness, a teaching material is needed to implement the teaching model being developed.

B. Results of a Limited Trial of Sadguna –Based Character Teaching Model.

Pratically, there are some problems faced by the teacher in implementing *sadguna* - based- character education which can be shown in the following figure.

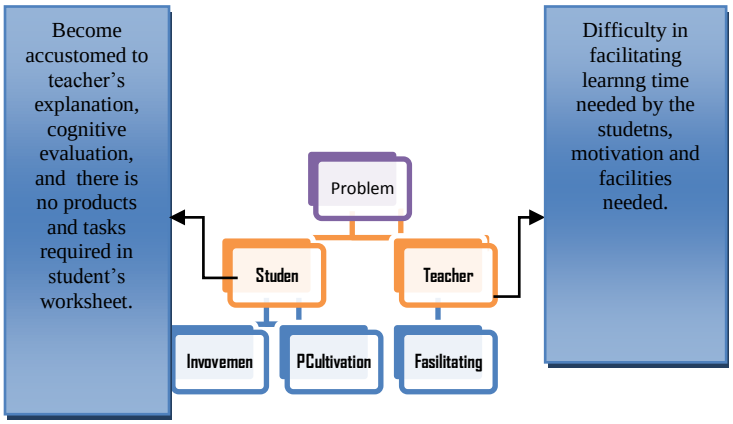

Fig. 2.Limited Trial of Sadguna –Based Character Teaching Model

Practically there are several advantages of using a sadguna based character learning model, namely; (1) the syntax of learning model is very easy to be applied by the teacher and easily to be understood by the students, because it is relevant to the socio-cultural values that commonly grow and develop in the community, (2) the model steps require students to identify, seek information, analyze, infer and solve citizenship problems that are empirical, so as to develop students' critical thinking skills, (3) the applied learning model is able to develop spiritual skills, moral skills, social skills and intellectual skills at the same time and (4) a character-based character learning model requires an assessment of an authentic assessment, allowing students to demonstrate the real skills they have in the learning process [7]. Implementation of *sadguna* –based character teaching model in cycle 1 was able to develop knowledge, attitude, and moral skill of the students of Sekolah Menengah Pertama Laboratorium Undiksha. This was shown by the percentage of students' achievement (70%) in which 21 of 30 students were passing the learning mastery level, meanwhile the others were not. On the other hand, for the score of moral attitude in cycle 1, after being converted according to the conversion guide in Chapter III , it can be seen that there was no student with a moral attitude in the low and very low categories. On the other hand, the percentage of the highest level of moral attitude was in the medium category (21 students or 70%) and the rest in the high category (9 students or 30%). The score of moral attitude after being converted according to the conversion guide in Chapter III, spreads to all categories except the very high category, in which no students could reach it in the cycle.

On the other hand, in cycle II there was a 3.36% average increase, from 83.04 in cycle I to 85.83 in cycle II. Similarly, the percentage of learning mastery level increased by 20%, from 70% in cycle I to 90% in cycle II. In other words, there was an increase in the number of students with a complete mastery , from 21 students in cycle I to 27 students in cycle II. On the other hand, there was a decrease in the number of students who did not achieve the mastery level , from 9 students in cycle I to 3 students in cycle II which also indicated a very high increase in category, which was 13.3%, from 0% in cycle I (o student) to 13.3% (4 students) in cycle II. Similarly for the high category, which had a 10% increase, from 305 (9 students) in cylce I to 405 (12 students) in cycle II. The data on the moral skill of the students in cycle II showed that there was an increase in percentage in category; medium by 13.3%, from 30% (students) in cycle I to 43.3% (13 students) in cycle II, high by 20%, 3.3% (1 student) in cycle I to 23.3% (7 students) in cycle II, and very high by 10% , 0% (0 studnt) in cycle I , increasing by 10% in cycle II.

IV. CONCLUSION

The syntax of sadguna – based character teaching model consists of *sandhi*, *jana*, *sana*, *srya*, and *wisesa*. The phases in sadguna-based character teaching model is built based on constructivist philosophy and belongs to social teaching model group. The six phases in sadguna-basd character teaching model also shows that there are activities such as imitating, training, conditioning and cultivating of student character attitude and skill. The result of trial showed that every cycle in the the implementation of *sadguna* - based character teaching model was able to increase moral knowledge, attitude and skill of the students. In the first cycle the students reached the 70% level of learning mastery. In the mean time, for moral attitude score, no students had low and very low score categories. No students had very low score of moral skill . In cycle II there was a 20% increase in the percentage of mastery, from 70% in cycle I to 90% in cycle II, while the data on the students' moral attitude scores for cycle II showed that there was a very high enhancement in category (by 13.3%), from 0% in cycle 1 (o student) to 13.3% (4 students) inscyle II. Similarly, for the high category there was 1 10% increase, from 30% (9 students) in cylce I to 40% (12 students) in cycle II. The category of the students' moral skill in cycle II was increasing medium by 13.3%, from 30% (9 students) in cycle I to 43.3% (13 students) in cycle II; high by 20%, 3.3% (1 student) in cycle I to 23.3% (7 students) in cycle II; and very high category by 10%, from 0% (0 student) in cycle I to 10% (3 students) in cycle II.

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The Effect of Interaction between The Form of Formative Assessment and Learning Autonomy on Learning by Controlling Mathematical Logical Intelligence

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***Abstract*— This study was aimed at investigating the effect of interaction between the form of formative assessment and learning autonomy on learning achievement after controlling mathematical logical intelligence. The forms of formative assessment used in this study consisted of portfolio assessment and essay assessment. This study was conducted at Mathematics Education Department of Universitas Pendidikan Ganesha in Integral Calculus course using 2x2 treatment by level and involving 88 students who were selected by random. The data were analyzed by two way covariates analysis after mathematical logical intelligence was controlled. The result showed that there was an effect of interaction between the form of formative assessment and learning autonomy on learning achievement after logical mathematical intelligence was controlled. The students with a high learning autonomy were more suited to the learning process with portfolio assessment, while on the students with a low learning autonomy was more suited to the learning process with essay assessment.**

Keywords : form of formative assesement; Integral Calculus learning achievement

I. INTRODUCTION

In the S1 Mathematics Education Department Curriculum, it is clearly stated that Integral Calculus is one of the compulsory courses for the students of Mathematics Education Department of the Faculty of Mathematics and Science, Undiksha which is offered in the second semester. The expected competence is for the students to understand Integral Calculus concepts meaningfully by using Differential Calculus concepts. This shows that Integral Calculus should make the students not only know and learn procedures about the Integral Calculus concepts by heart, but it also should make them understand the concepts and their relationship with other concepts.

To be able to reach this, the lecturer should make the students learn the course meaningfully by preparing a semester program plan that requires him/her to perform process assessment in order the students can be assessed comprehensively. Then, the students should also be ready to follow the course. The readiness here means being able to understand the Integral Calculus course materials meaningfully. A good mastery is required very much from the students, since the concepts contained in this course are the foundation and prerequisite for other courses.

However, Integral Calculus instruction is still a problem for the students, as what is revealed by Astuti in [1] that some causes of the problem are that the students' low mastery of Integral Calculus basic concepts, and the instructional process and assessment process applied are still conventional processes. This view is also confirmed by Mahayukti in [2] and [3] who stated that the low learning achievement in Calculus course was caused by the fact that : 1) the students still use a learning pattern like the one at high school 2) they are weak in Calculus concepts. Based on the experience in teaching this course and the result of an interview with the students it can be stated that the assessment used so far has been made based only on some tasks which sometimes have not been followed up, the middle test and the final test have been in the form of essay given after the learning process. Essay assessment has some weaknesses since it does not measure students' competence comprehensively and tends to cover limited materials.

Assessment which only refers to certain cognitive aspects does not represent the real knowledge of the students will only be procedural in nature. According to Javanmard in [4] problems which arise as the effect of an inaccurate assessment can demotivate the individual to learn leading to a low learning achievement. This reality is the gap in Integral Calculus instruction between the expectation and the reality.

This formative assessment is not only in the form of test, it can also be in the form of a summary or portfolio collected by the students. Anderson and Krathwol in [5] point out that

formative assessment gives information to the teacher and the students concerning the materials which are being discussed.

Assessment forms intended in this study are portfolio assessment and essay assessment. Kaino in [6] said that portfolio assessment gives opportunity to the lecturer to think about what the student will do and why they should do it. In this way the lecturer can assess actions that have been taken now and the result expected, this reflective practice is aimed at helping the lecturer to think about the decision and experience that they have got. This statement also supported by Stiggins in [7] who stated that Portfolio assessment has an outstanding benefit compared to other written assessments. Since the students are involved in self assessment from time to time Dantes in [8] also said that portfolio assessment is also a comprehensive assessment approach since it can cover cognitive, affective and psychomotor domains and can facilitate interests and progresses of the students individually.

The results of research previously which are related to portfolio come from Hosseini and Gabhanci in [9] who show that portfolio assessment has a significant effect in enhancing students' reading experience and motivation, similar to this finding is the finding of a research done by Dewi, Dantes & Marhaeni in [10] in which it is shown that the use of portfolio assessment can increase writing ability in English after verbal ability is controlled.

Beside assessment factor, Hargis in [11] said that there is the internal factor in the student which influences a students' learning achievement, and this factor is learning autonomy. Learning autonomy aspect is the students' internal factor which also has an effect on his or her attainment of learning achievement. Boekaerts & Zedner in [12] and Camahalan in [13] find that there is a very significant positive correlation between students' mathematics academic achievement and his/her learning autonomy.

According to Gredler in [14], learning autonomy was first introduced by Bandura in the social cognitive theory which states that social, cognitive, and behavioral factors play an important role in learning process. While Zimmerman in [15] defines learning autonomy as the process that has occurred because of the effect of thinking, feeling, strategy and one's own behavior which orient one to the goal.

Thus, literally, learning autonomy can be defined as the condition in which in the effort to get knowledge, an individual does not depend on other people. The students learns autonomously and this does not mean that he/she learns alone. The role of the lecturer is still required. The instruction has to be designed to make the students active, the lecturer's domain should be lessened in the classroom and it should be taken over by his/her role as facilitator and motivator.

Autonomy in learning according to Zimmerman & Martines-Pons in [16] and Boekaerts, Pintrich & Zeidner in [12] there is an open process which needs cyclical activities in three dimensions: forethought, volitional control, and self reflection. This is also supported by Zimmerman in [17] who said that the students who have learning autonomy feel and act to achieve the instructional goal. This is not much different from Pintrich's view in [18] that there are four dimensions in forming the students' learning autonomy, i.e., forethought (planning, activation), monitoring (control), reaction, and reflection.

In relation to the characteristics of a higher level of mathematics materials, including Integral Calculus, theorems almost form the core of the mathematical discussion, so does the proving of theorems. The proving of a theorem (this also applies in answering essay mathematical problems) is a rigorous procedure. Suparta in [19] said that it means that the truth of every statement has to be accounted for based on logical–mathematical rules. This process requires students' hard work. The details of the evidence of a theorem can be different but have to follow rigorous and correct stages of proving according to logic and mathematics. So an act of proving something stresses hard work, honesty, and discipline very much. Hard work and honesty are closely related to the characteristics of portfolio assessment.

A question related to the characteristics and the implementation of learning autonomy is why learning autonomy needs to be considered in the individual who learns mathematics, especially Integral Calculus. The answer is related to the nature and vision in mathematics as a subject of study. Sumarmo in [20] stated that mathematics has a variety of meanings, depending on who uses it. One of its definitions of mathematics is a discipline which stresses the importance of logical and axiomatic reasoning, containing inductive process, mathematical model, analogy and generalization. The implication of such a nature of mathematics is then mathematics is oriented toward developing among other things: (1) mathematical thinking ability; (2) mathematical disposition or habit, and a high quality learning attitude. The learning habit and attitude are reflected among other things in the characteristics of learning autonomy. While Gardner in [21] said that another factor which contributes to the students' learning achievement, both directly and indirectly is the students' logical mathematical intelligence. Logical mathematical intelligence is the ability that is related to the use of numbers and logic effectively.

Logical mathematic intelligence is a combination of mathematical ability and logical ability so that the students can solve a problem logically. Logical mathematical intelligence is needed in learning mathematics which puts the first priority to mathematical ability and logic. According to Campbell in [22], logical mathematical ability involves many components: mathematical calculation, logical thinking, problem solving, deductive and inductive consideration, and sharpness of patterns and relations. That statement also supported by Suparta in [19] who said that Integral Calculus which studies about integral theorems, calculus basic theorems, and unnatural integral application really needs logical mathematical intelligence, since one of the objects in mathematical education is theorem. The result of a research done by Yalmanci & Gozum in [23], Safranj in [24] and Winastri, Suparta & Sariyasa in [25] shows that logical mathematical intelligence contributes to the ability to solve problems and students' learning achievement.

Based on the background of the problems that have been stated, the problem in this study was whether there is any

effect of interaction between the form of formative assessment and the students' learning autonomy on their learning Integral Calculus learning achievement after controlling their mathematical intelligence.

II. RESEARCH METHODS

This study was conducted in the Even Semester in the academic year of 2015/2016 at Mathematics Education Department of the Faculty of Mathematics and Science of Undiksha. The population consisted of all students of Mathematics Education Department who learned Integral Calculus. The population was distributed into four classes with relatively homogeneous characteristics. A random sampling resulted in class B and class C as experiment group and class A and class D as control group.

Each group was divided into top group (having a high autonomy) and bottom group (having a low autonomy), by allotting 33% for top group and low group. This method supported by Gall, Gall & Borg in [26]. Then the members of the sample of each cells were selected randomly with the same number (22) so that the total of the sample was 88.

Lawshe test in [27] involves 8 experts to determine content validity of the instrument before being tried out empirically. To measure learning achievement, an Integral Calculus learning achievement test was used. The result of the empirical try-out showed that the ten items used were valid with the reliability coefficient of 0. 87. The result of empirical testing of learning autonomy questionnaire showed that 37 items were valid with the reliability coefficient of 0. 89. Meanwhile, the result of the empirical try-out test showed that 5 items failed for mathematical intelligence test and 40 items were valid with the reliability coefficient of 0.85

III. RESULTS AND DISCUSSION

A. The Testing of Analysis Perequisite

The testing of analysis of perquisite used SPSS 20.00 consisting of normality testing of data distribution, homogeneity testing, linearity testing, significance testing and the parallelism of the regression lines. And all of the tests met the prerequisite so that it could be continued with hypothesis testing.

B. Hypothesis Testing Units

The results of the study which were analyzed with SPSS program are presented in Table 1.

TABLE I. CORRECTED AVERAGE OF INTEGRAL CALCULUS LEARNING ACHIEVEMENT FORMED BY FORMS OF FORMATIVE ASSESSMENT AND LEARNING AUTNOMY FACTORS

Learning Autonomy	Table Column Head		Total
	Portfolio	***Essay***	
High	80.56	71.56	76.06
Low	72.54	75.85	76.06
Total	76.55	73.70	

TABLE II. UNIVARIATE GLM FORM BY FACTORS A AND B

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1834,468[a]	4	458,617	29,619	0,000	0,588
Intercept	3272,383	1	3272,383	211,342	0,000	0,718
X	586,979	1	586,979	37,909	0,000	0,314
A	177,440	1	177,440	11,460	0,001	0,121
B	76,741	1	76,741	4,956	0,029	0,056
A * B	824,767	1	824,767	53,266	0,000	0,391
Error	1285,157	83	15,484			
Total	499771,000	88				
Corrected Total	3119,625	87				

TABLE III. T-STATISTIC TEST OF THE PARAMETERS OF THE AVERAGE OF INTEGRAL CALCULUS LEARNING ACHIEVEMENT (Y) OF ALL LEVELS OF FORMS OF FORMATIVE ASSESSMENT (A), FOR EVERY LEVEL OF LEARNING ACHIEVEMENT (B) BY CONTROLLING MATHEMATICAL LOGICAL INTELLIGENCE (X)

Parameter	B	Std. Error	T	Sig
Intercept	53.60	3.74	14.33	0.00
X	0.80	0.13	6.16	0.00
[B=1]	-4,28	1.19	-3.60	0.00
[B=2]	0[a]	.	.	.
[A=1] * [B=1]	8.99	1.19	7.55	0.00
[A=1] * [B=2]	-3.31	1.19	-2.79	0.01
[A=2] * [B=1]	0[a]	.	.	.
[A=2] * [B=2]	0[a]	.	.	.

Hypothesis 1

$H_0 : (AxB)_{ij} = 0$, for all i's and j's

$H_1 (AxB)_{ij} \neq 0$, for all i's and j's

In Table 2, line (A*B) the F_{obs} obtained was 53.27 at sig. lower than 0. 05, which means H was rejected. Hence, there was an effect of the interaction between the form of formative assessment and learning autonomy on learning achievement in Integral Calculus, after controlling logical mathematical intelligence. Hence, the test could be continued with t-test.

Then, the simple effect hypothesis test could be done as follows.

Hypothesis 2

$H_0 : \mu^* A_1 B_1 = \mu^* A_2 B_1$

$H_0 : \mu^* A_1 B_1 > \mu^* A_2 B_1$

In Table 3, line [(A=1)*(B=1)] the t_{obs} value was 7.55 at sig.< = 0. 05, so that H0 was rejected. Then, Table 1 shows that in the group of students with a high learning autonomy, the corrected average of learning achievement in Integral Calculus of the students who learned through the process of instruction with portfolio assessment was 80. 56, higher than that of those who learned through a process with essay assessment (71. 56).

Hence, in the group of students with a high learning autonomy, the learning achievement in Integral Calculus of the students who learned through the process of instruction with portfolio assessment was significantly higher than that of those who learned through the process instruction with essay assessment, after controlling logical mathematical intelligence.

Hypothesis 3

$$H_0 : \mu^* A_1 B_2 = \mu^* A_2 B_2$$

$$H_1 : \mu^* A_1 B_2 < \mu^* A_2 B_2$$

In Table 3, line [(A=1)*(B=2)] the t_{obs} = -2.79 and $|t_{obs.}|$ = 2.79 at sig.< 0.05, so that H0 was rejected. Then, from Table 1, it is apparent that in the group of students with a low learning autonomy, the corrected average of learning achievement in Integral Calculus of the students who learned through the process of instruction with portfolio assessment was 72.54, lower than that of those who learned through the process of instruction with essay assessment (75. 85).

Hence, in the group of students with a low learning autonomy, the learning achievement in Integral Calculus of the students who learned in the process of instruction with portfolio assessment was lower than that of those who learned through the process of learning, after controlling logical mathematical intelligence.

Furthermore, in addition to the results of hypothesis testing that has been described, from the analysis of the students' responses after the test finished it can be seen that the students who learned in the process of instruction with portfolio assessment had a better ability in solving C4 and C5 level items than those of the students in the control group, this can be seen from the percentage of correct answers of the problems which reached 70%, while in the control group it only reached 40%. Besides, a feedback to the students' work had stimulated 80% of the students to do their tasks seriously. Suparta in [19] said that the effect of logical mathematical intelligence in this case has to be controlled since it is the ability that is related to the effective use of numbers and logic and this intelligence is very important since it helps in developing an individual's thinking skill and logic, and is related to mathematics, especially Integral Calculus. This statement was also confirmed by Safranj in [24] who states that the students who learned a subject that was oriented toward logical mathematical intelligence obtained a better learning achievement than the conventional group.

Suherman in [28] stated that the process of learning with portfolio assessment conforms to the learning theory with the constructivist perspective, since the assessment in mathematics instruction occurs as an on –going assessment. In addition, Herman in [29] said that the application of portfolio assessment in teaching helps the students in solving more difficult and complex problems, since mathematics cannot be separated from theorems which are interrelated and abstract. Cakan,et al in [30] shows that the group who used portfolio had a better learning achievement than that of those who used portfolio, their attitude was also positive toward science. This was confirmed by Gunes, et al in [31] who shows that the application of portfolio assessment gave a positive effect on the students' success and decreased the level of anxiety as prospective teachers. Thus, to understand the concepts of Integral Calculus well, there has to be an on-going assessment. It means that to master high level mathematics, the students have to master the basic concepts well. Since mathematics has a hierarchical characteristic, it suits the on-going portfolio assessment very well and the students should be involved in giving the assessment of their works through self-assessment.

In addition, the students have the opportunities at least twice to do the tasks given, if portfolio assessment is used in teaching, when there is an error in a concept it can be corrected soon and the students' retention of the concept will become stronger, as put forward by Rose and Nicholl in [32] who states that the more frequent an individual can see, hear, write or do something, the easier it is for him/her to learn.

The result of the hypothesis testing is supported by the theory that there are two important things that should be considered in the process of teaching. First, what material is taught and how it is taught. In other words, the competence to be developed in the students has to be developed by considering the characteristics of the competences that the students have got and the characteristics of the students. Since Integral Calculus has very abstract materials which are related to each other like a spiral since it is a discipline which does not only contain concepts, formulas, or principles, but also processes of how the concepts or principles are obtained , the students need an extra effort to master the basic concepts well to understand and master the next material. This, certainly, needs autonomy from the part of the students, since learning autonomy can remedy the thinking process, and influence the learning process and learning achievement. Hiemstra in [33] states that an individual with a high level of learning autonomy has a high level of confidence about his or her ability and a high initiative in performing the tasks (learning), this is like what is put forward by Zimmerman in [15] that the student with learning autonomy has autonomy in thinking, feeling and does something to reach the learning goal. Secondly, how to do an assessment or access the students' learning development. In this context, assessment used has to suit the characteristics of the learning achievement indicators. Thus, there is a need for a suitable assessment, and to know when the appropriate time to access the students' learning development is. The most important thing is how to follow up the result obtained through the assessment to improve learning. Ahmed in [34] finds out that change in emotion and learning correlates positively with mathematics learning achievement. Similarly, Mulyaningsih in [35] also shows that learning autonomy has a significantly positive

effect on the students' learning autonomy. It means that the higher learning autonomy the higher the learning achievement. This is explained in a more precise terms by Olaoye in [36] that a students' learning autonomy has a significant correlation with her or his mathematics learning achievement.

The characteristics of portfolio assessment goes very well with a high learning autonomy, thus portfolio assessment is more effective in increasing the learning achievement of the students with a high learning autonomy. Lubis in [37] stated that the students with a high autonomy are more able and more confident to organize information by themselves and always do an analysis of the information obtained by themselves compared to those with a low autonomy if they are given an essay assessment which tends to make the students less creative.

So far in Integral Calculus course the lecturer tends to use essay assessment and the students follow the given rules in completing it. Since the concept to be used to do the assessment is already clear, this causes the students not to have an opportunity to do his or her self- assessment that is related to the works that they have done, they tend to use only the principles and concepts that have been taught to solve the problem so that they do not know the errors that they make, and the errors will be repeated over and again. The students become less able to relate a principle or concept and this has an impact on the students' learning achievement.

The implementation of the two formative types of assessment will create different conditions and environments. This has an impact on the students' concept understanding. The condition of teaching using an appropriate assessment will make the teaching become optimal. This agrees with Aiken's statement in [38] that the advantage of using portfolio assessment is that it can measure the students' abilities to organize, to relate their thinking patterns well which cannot be easily found out from other assessments.

Based on the empirical findings and the relevant results of studies it can be concluded that there is an effect of interaction between the form of formative assessment on learning achievement in the Integral Calculus, after controlling logical mathematical intelligence.

IV. CONCLUSION

Based on the result of hypotheses testing, then the finding from this study is that there is an effect of interaction between the form of formative assessment and learning autonomy on the students' Integral Calculus learning achievement, after controlling logical mathematical intelligence. In the group of students with a high learning autonomy, the students'

Integral Calculus learning achievement who learned through the process of instruction with portfolio assessment is higher than that of those who learned through the process of learning with essay assessment.

With reference to the finding of this study, it is suggested that the lecturers in Mathematics Education Department to make portfolio assessment one of the alternative assessments to be implemented in research on other courses and can choose a form of assessment that suits the students' characteristics. This findings of such studies are expected to complement this research finding at Mathematics Education Department of the Faculty of Mathematics and Science of Undiksha.

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Sport Education Model (SEM) Towards Study Result of Passing

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***Abstract*— This research is aimed to know the sport education model that significantly influences toward the study result of passing in futsal. The research method used is experimental method. The population was the eleventh grade students of vocational school namely SMK PGRI 1 Cimahi as many as 24 students. All of the population were chosen as sample. The design of this research is pretest posttest control group. The instrument used is passing test that was measured by rubric. Based on the data analysis, it was obtained the value of t as many as 16.58 bigger than t table 1.714. It can be concluded that learning using sport education model gives significant influence towards the study result in futsal to the students of SMK PGRI 1 Cimahi. Based on the findings, the implication of this research is SEM influences positively towards passing in futsal to the students of SMK PGRI 1 Cimahi.**

Keywords—Sport education model; passing; futsal

I. INTRODUCTION

Education is an effort to advance children's character, mind and body. Education is an activity in increasing human's personalities by constructing his spiritual body and potencies such as taste, thought, intention, and creation [1]. Physical education basically is an integral part of education system as a whole that aims to develop students' health, fitness, critical thinking, emotional stability, and moral action through physical education activity [2].

Students will obtain various expressions related to pleasurable personalities and creative expression through physical education. Besides, they also have physical fitness, the habit of healthy life and knowledge about humans' movement [3].

Physical education is a process which is conducted consciously and systematically through varieties of activities in order to get an ability, development, intelligence, and character building. The main objection of education is to develop individual to be creative and adaptable to the environment. The nature of physical education is an educational process in employing physical activities to produce holistic changes. Also, the positive influence of physical education is expected to be able to support students' development in cognitive, affective and psychomotor.

Nowadays, futsal tends to be a trendy sport in society. Futsal is easy to be applied since it is almost equal with football. Futsal is simpler than football. Because of its popularity, there is also official competition namely Pro Futsal League (PFL) in Indonesia. Futsal is usually played by five players in each team. Futsal is played as long as 2x20 minutes. The size of futsal field is 25-45 m in length and 15-25 m in width. The size of goal post is 3 m in length and 2 m in height. The weight of the ball is 390-430 gr.

Futsal is one of sports that use big ball which is played by two teams. Each team is consist of five persons. The aim of this game is the same as football that is entering the ball towards the opponent's goal post [4].

Futsal was created in Montevideo, Uruguay in 1930 by Jua Carlos Ceriani when the world cup held. In Portuguese, this sport was named *Futebol De Salao* and in Spain was named *Futbol Sala.* Both of them have the same meaning namely room football [5].

The level of technique mastering determines the result of futsal's competition. It will be impossible if the player only relies on physical ability since the process of playing futsal occurs quickly and there is more touch with the ball. Besides, player needs faster recovery process.

There are some basic techniques in futsal such as passing, stopping, shooting, receiving, chipping, heading and dribbling [6]. Passing is known as key of success in futsal since the players most use this technique most. Passing is an integral component in playing futsal. If the players have good passing, so they are able to play effectively and efficiently.

In general, the dominant technique needed is the player's technique not the keeper because in playing futsal there must be team work in defending and attacking.

Basically, passing in football and futsal is executed using instep foot and also by using top of foot, heel and toe [7]. Passing is a dominant basic technique and is needed in playing futsal. Since the field is so small, so the accurate and tough passing will be needed [8].

Sport education model (SEM) is a new learning model in Indonesia. It has not been applied yet because the teachers

have less knowledge about this model. SEM applies whole aspects of physical education. On the average, the teachers teach the students without using learning model. SEM is viewed interesting to be implemented in schools.

Sport Education (SE) is curriculum model which was developed by Siedentop in 1994. This model was introduced in Commonwealth Games Conference in Brisbane, Australia [9]. SE is a curriculum and instruction model designed to provide authentic, educationally rich sport exercises for girls and boys in the context of school physical education [10]. On the other word, this model is designed to give obvious exercise to the students about their involvement adjusted to the situation of physical education in school.

This model was studied in Australia, New Zealand, English and Korea. The main objective of SE is to construct the athlete (students) to be competent, literate and enthusiastic.

Competent students mean those who have an ability to participate in good game and be able to perform precise strategy in difficult game. Meanwhile, literate students refer to those who have understanding of rules and the tradition of sport. Also they are able to differentiate which one is bad or good exercise and which one is children's sport or professional sport. The aim of enthusiastic is made in order to make students can participate and take care of the value of sport. Learning using SE is the best way to organize the purpose of physical education by focusing on team work and fair play.

There are some features in conducting SEM [11] such as:

- Content selection. This feature contains choices to choose which sport that will be put in competition and arrange the appropriate scheme.
- Managerial control. This feature takes place in arranging the task and role in competition (coach, manager, etc.)
- Task presentation. It consists of the display of task in order to develop team's skill and strategy.
- Engagement pattern. In this feature the students (outside the team such as linesman, statistician, etc.) are burdened with task and responsibility.
- Instructional interaction. This feature will be visible in students' interaction related to team work in a team and outside the team.
- Task progression. This feature requires the students to form exercise based on their evaluation.

SEM has six identities and each of them is the visualization of real sport management. They are:

- Seasons. SEM uses longer seasons or period included exercise periods (before competition, in competition, after competition and grand final).
- Team affiliation. The students become constant member in a same team in whole seasons. This gives them a chance about affective, reaching the aims, team decisions, and experience. A team will contribute strong feeling towards themselves and as team member.
- Formal competition. The students make a lot decisions about the formation and the implementation in a season. They can modify the rule of the game. The schedule of formal competition makes them decide the short term and long term in the season. The schedule will make the player focus on the exercise and the preparation.
- Culminating event. Usually, there are several competition systems: round-robin tournament, team competition or individual competition either one meeting or home away system.
- Record keeping. The competition occurred gives opportunity to take a note as strategy and motivation. A note can be easy or difficult depend on students' talent. By taking note, they help to provide background of competition schedule. The statistic is also able to be used by coach and player to analyze their strength and opponent.
- Festivity. Sport event is popular by its merry. In small scale (without limit the event) students can conduct celebration of champion.

SEM is one of learning models in physical education subject that makes the students active in joining learning process. The students who are involved in SEM will be enthusiast and competent in doing sport. Furthermore, they tend to develop towards good direction and they are able to enhance their fitness.

The students could construct their own motivation since they have responsibility given by the teacher. They will experience joyful sport.

II. RESEARCH METHOD

To obtain an appropriate data related to this research, the researcher used experimental method and pretest – posttest control group. Experimental method is used as one way to seek the causal relationship that is intentionally presented by the researcher by eliminating intruding factor [13].

The research needs the data resource. Generally, the data resources are population and sample. Population has important role because population is the entire object of the research. Population in generalized area is consist of object/subject that has certain determined characteristics and qualities that will be studied and concluded.

Sample is a part of examined population. In determining the sample, the researcher must seek those who represent the population.

In this research, the population was the students of SMK PGRI 1 Cimahi that consisted of 758 students. By using cluster sampling technique, as many as 24 students were taken as sample. Cluster sampling technique was chosen since the

object or the data resource consisted of large number. The research design can be seen in following figure:

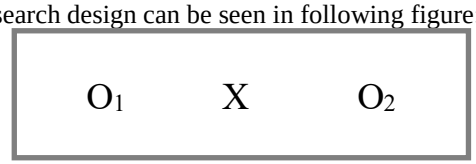

Figure 1
Pretest Posttest Control Group Research Design [14]

Note :
O_1 : Pretest
X : treatment using SEM
O_2 : Posttest

The data was obtained from students' pretest and posttest score in doing test. The score was assessed through rubric. Test is some questions or exercise used to measure skill or intelligence that individual have. Test is an instrument used to obtain objective data about students' study result. In this research, the instrument used is passing test [15]. The scoring system can be seen in following table.

TABLE I. THE POINTS OF SCORING TO THE RESULT OF PASSING IN FUTSAL

Stage	No	Scoring Criteria	Score			
			1	2	3	4
Preparation	1	Feet are widely opened as shoulder parallel to the ball.				
	2	The foothold is placed beside the ball approximately 10-11 cm to the ball.				
	3	Kicking foot is lifted behind. The position of the foot is straight to the target.				
	4	The body rather leans forwards. Both of hands are opened aside to balance the body.				
Execution	5	The kicking foot is swung forward so the instep touches the ball.				
	6	When kicking the ball, the eyes look at the ball. After kicking the ball, the eyes look at the ball route.				
	7	When kicking the ball, the body rather leans forwards.				
	8	The hands are aside the body.				
	9	Control the dribbling ball forwards.				
Follow-through	10	The kicking foot is placed on the ground.				
	11	Move forwards 2-3 steps.				
	12	The eyes still look at the ball and target.				
	13	The position of hands is aside the body.				
	14	The body relaxes.				
Total						
Maximal Score						

Skill can be described as an indicator to mastering level in something. Skill points to particular action. Many activities are considered to skill and its mastering degree explains the level of skill. In other word, one or some strengthened movement patterns are skill.

Skill is also known as the activity related to nerve which is done physically such as writing, typing, doing sport, etc. Not all of the motoric activities are mentioned as skill, but all of skills are motoric activities.

TABLE II. THE CRITERIA OF SCORING NORM IN MASTERING PASSING IN FUTSAL

Percentage	Score Range	Criteria
80 – 100	45 - 56	Very good
66 - 79	37 – 44	Good
56 – 65	31 – 36	Enough
41 – 55	23 – 30	Bad
0 - 40	0 – 22	Very bad

III. RESULT

All of the data are analyzed using statistical test. The researcher collected the data from the result of passing test in futsal. The steps of calculating the data are follows:

- Calculating the mean score
- Calculating the standard deviation
- Substituting the raw data into z score
- Testing the normality
- Testing the homogeneity
- Conducting hypothesis test using t test.

A. Mean Score and Standard Deviation

The first step that was conducted by the research was arranging the data obtained. Then, the researcher calculated the mean score and the standard deviation. The result can be seen in following table:

TABLE III. THE RESULT OF MEAN SCORE AND STANDARD DEVIATION

Group	Test period	Mean score	Standard deviation
Group SEM	Pretest	27.04	2.05
	Posttest	37.5	3.09

From the table, it is known that the mean score of pretest is 27.04 and the mean score of posttest is 37.5. Meanwhile, the standard deviation of pretest is 2.05 and the standard deviation of posttest is 3.09.

B. Normality Test

Normality test was conducted using liliefors test approach. The hypothesis is there is no different result from SEM towards the enhancement of passing in futsal to the students of SMK PGRI 1 Cimahi.

TABLE IV. THE RESULT OF NORMALITY TEST

Group	Test period	Lo	L table		Result
			0.05	24	
Group SEM	Pretest	0.132	0.173		Normal
	Posttest	0.102			Normal

Based on the table, the value of Lo from pretest is 0.132 and from posttest is 0.102. The critical value of L is 0.173. Both of Lo are smaller than L table which means the data from two periods are normal.

C. Homogeneity Test

TABLE V. THE RESULT OF HOMOGENEITY TEST

Group	F	F table	Result
Group SEM	2.26	2.7	Homogeneous

According to the table above the value of derived F is 2.26. It is smaller than F table (2.7) which means the data from pretest and posttest are homogeneous.

D. Hypothesis Test

This test was conducted in order to know how SEM influences passing in futsal to the students of SMK PGRI 1 Cimahi. The result can be seen in following table:

TABLE VI. THE RESULT OF SIGNIFICANCE TEST

Group	Test period	Mean score	Standard deviation	t test	t table	Result
					0.05(46)	
Group SEM	Pretest	27.04	2.05	16.58	2.021	Significant
	Posttest	37.50	3.9			
Rise		4.22	9.57			

The calculation above show the value of t test from exercise using SEM is bigger than the t table (16.58 > 2.021). So the hypothesis is rejected. It means there is a significant difference in implementing SEM towards study result of passing in futsal to the students of SMK PGRI 1 Cimahi.

IV. DISCUSSION

According to the result about the study result of passing in futsal, it has good improvement. This is proven by the result of calculation of t test that is 2.75 which is bigger than t table 2.021. So, the hypothesis is rejected and the alternative hypothesis is retained stating there is significant influence from the implementation of SEM towards the study result of passing in futsal to the students of SMK PGRI 1 Cimahi.

By using this learning model, the teachers are urged to give learning model based on curriculum. The students have double roles. The first one, the students' role as a team consisted of player, coach or captain. The other one is nonplaying role consisted of linesman, referee, retriever, etc. Those roles are basis in assessment towards students' success in learning.

V. CONCLUSION

Based on the research and the data analysis, the researcher draws conclusion that there is significant improvement to the students of SMK PGRI 1 Cimahi after being given SEM as a treatment as long as three weeks towards passing in futsal.

VI. IMPLICATION

Based on the findings, the implication of this research is SEM influences positively towards passing in futsal to the students of SMK PGRI 1 Cimahi.

VII. SUGGESTION

According to the result of research, the researcher suggests SEM becomes a reference for the teacher and coach in enhancing students' study result especially in passing in futsal. SEM makes the students easy to remember the movement. To the next researcher, it is better to conduct this learning model to other sport with larger sample.

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Critical Responses of Junior High School Students to Deviant Social Practices in Their Environment Using Creative Dialogue

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***Abstract* — This article reports the findings of qualitative research on the critical responses of junior high school students to deviant social practices in their environment using a creative dialogue learning model. The focus of this research is what deviant social practices most students find in their environment and how students' critical responses to such deviant practices are. The subject of this research is the seventh grade students of SMPN 3 Malang. Research data is in the form of students' responses to the type of deviant practices and students' critical responses to such deviant social practices. Data were analyzed by using spiral process, i.e. describing, classifying, and interpreting. The findings of the study indicate that the most disturbing social practices found among students in their environment are domestic violence and bullying. Students' critical responses are diverse, i.e. arguments, criticisms, and suggestions.**

Keywords* — *Critical responses, deviant social practices, creative dialogue

I. INTRODUCTION

Modern literacy approach views the activity of reading as a social process [9]. The impact is that the readers' interpretation of the text content involves negotiations among authors and readers around meanings, purposes, and contexts [3]. This is consistent with the nature of a text as a manifestation of social activity and which has a social purpose. A text exists due to the demands of a social activity, which is why reading a text cannot be separated from its social context. The readers' interpretation of the text content is affected by their social experiences and social context in which readers live [18].

The paradigm of reading as a social process is a critical reaction to a view that expresses reading as a process of interaction between readers and the text, can be separated from its social context [9]. More recently, social theories of language and literacy have conceptualized text in social rather than cognitive ways [18]. Reading as a social process requires recognition, assessment, and writer-reader interaction and also creates social relations between the parties involved in the reading process.

In the perspective of reading as a social process, reading is not seen as a neutral activity [9]. Every speech delivered by the author, illustrator, or other social actors, consciously or not, is a discourse that is not only derived from ideas that exist in the minds of the social actors, but also come from social practice that is deeply rooted and oriented to the real social material structure [4]. Hence, critical attitude is always necessary to question what lies behind the words, and from whom the words were coming from. Language is a social practice that requires us to be critical, not just accepting any ideas, concepts, or collections of considered established ideas. The underlying assumption is that there are no pure or simple words.

Every reading activity contains construction of ideology and power. Those social relationships are connected by the method to reveal text's meaning through parties involvement in reading activities, such as linking one event to another event. Reading activity in the perspective of social process aims to foster reader's critical response of the social practices in the text [10]. Critical response is a critical expression of the text resulting from the growth of critical consciousness. Critical consciousness is defined as the ability to recognize conditions that led to the appearance of privileged parties who can dominate others. Having critical awareness means being aware of the acceptable and not acceptable historical, social, cultural, or ideological in a given society [5]. It cannot be denied because, in daily life practice, we live with the idea about what is acceptable and not acceptable, what is right and wrong, or neutral. Beliefs about the right, the wrong, the acceptable, the unacceptable, or the neutral are not always the same in every context between individuals and society.

Junior high school students, in general, do not have the critical response of social practices that occur in their everyday environment because they are mostly still preoccupied with themselves and living in their own world [10]. Johnson's [10] opinion is refuted by a classroom action research conducted by Man and Lau [14] on novice English students which shows that students' personal reasoning and expressions gradually increase to critical responses after learning through creative dialogue. This improvement is supported by the willingness of educators to provide

classroom conditions, social structures, and modeling practices that help students to gradually improve critical responses [14]. Man and Lau [14] also state that learners are not only invited to analyze social problems as intellectual exercises but also involve their emotional level to discuss their attitudes toward social issues.

Inspired by Man and Lau's research findings, the authors conducted a qualitative study to expose the critical responses of junior high school students to deviant social practices in their environment using creative dialogue. The focus of this research is what deviant social practices most students find in their environment and how students' critical responses to such deviant practices are.

II. THEORETICAL FRAMEWORK

A. Critical Response

Critical response is a critical expression of the text resulting from the growth of critical consciousness. Critical consciousness is defined as the ability to recognize conditions that led to the appearance of privileged parties who can dominate others. Having critical awareness means being aware of the acceptable and not acceptable historical, social, cultural, or ideological in a given society [5]. It cannot be denied because, in daily life practice, we live with the idea about what is acceptable and not acceptable, what is right and wrong, or neutral. Beliefs about the right, the wrong, the acceptable, the unacceptable, or the neutral are not always the same in every context between individuals and society.

The critical response needs to be raised towards what is happening at home, what they should and should not do, what their parent like and dislike, and what values should be applied in the environment [10]. This critical response should be introduced to junior high school students so that our younger generations are not alienated from society and have a concern/sensitivity to the problems faced by society/nation, and able to provide solutions to various problems faced by the community/nation. Education is for self-activating explores for life, for citizens [11].

Literature is an excellent tool to foster junior high school students' critical response to the socio-cultural practices in a text by associating them with the life facts of the students. This is because literature has a potential to provide information or educate through imaginative representations of human experiences [7]. Literature also involves the use of language, imagination to objectify, restate, create and explore human experience [7]. In addition, literature is an abstraction of life and life is a social reality [17]. Literature is a portrait and social product because a writer is a member of the community and he or she creates works to be enjoyed, appreciated, and is as mean of catharsis for the society.

Junior high school students need to have their critical response cultivated to the social facts with the added flavor of the author's imagination, and then the students are asked to compare or associate them with concrete facts in everyday life, after which the student do reflection. The ultimate goal is for students to identify, be sensitive, and be concerned about societal problems in their environment and contribute in providing the best solution to the phenomenon. The result of this growth of critical response is to give contributions to the social changes along the lines of power relations in the communication process [16].

Social skill, a skill to interact with others directly and deeply to understand what they are feeling and to provide responses and solutions to the problems faced by others, is an important skill that must be cultivated on the younger generation of the digital age and generation Z. This is because the younger generation from digital/z era tends to lack social skills and have low attention spans to social problems [13]. Therefore, teachers need to provide serious attentions to this problem and design activities that can foster their critical awareness to the social practices around them.

Having critical response means having an awareness of social practices contained in the context of a particular community. In certain communities, such as some Javanese communities, there are traditions that grant privileges to men; men have higher positions than women. There is female subordination or second-class label against women that causes men to have the privilege to be the first in almost everything that matter. Women are second class citizens; so even to eat, they have to wait for their husbands as the head of the family. Men are prohibited from doing female works, namely cooking, washing, sweeping, or mopping.

B. Creative Dialogue Learning Model

This creative dialogue learning model is adapted from [1] which states that creative dialogue is a responsive reading learning model involving four stages of interactive dialogues between teacher-students. The four stages of the creative dialogue are (1) descriptive phase, (2) personal interpretation phase, (3) critical/multicultural/anti-bias phase, and (4) creative phase. Descriptive phase is the stage of understanding the contents of the read text, especially understanding the factors of domination, power, and ideology behind the text. Interpretation phase is the stage to encourage students to use their knowledge, experience, and emotions to provide personal critical reflection. Critical phase is the stage to give a critical response to the social aspects contained in the text by combining intellectual and emotional abilities. Creative phase is the stage of constructing / producing critical attitudes that are found using various forms to further raise the critical awareness of learners of the text.

The creative dialogue learning model by Ada and Campoy [1] is adapted to foster critical response of junior high school students to deviant social practices in their environment under the same name, which is the creative dialogue learning model (revision). Creative dialogue learning model (revision) is a learning model consisting of four stages. The outline of the creative dialogue learning model syntax that is used to cultivate students' critical response of social practices in the text can be seen in the following example.

TABLE 1. Stages of Creative Dialogue Learning Model (Revision)

Learning stages	Learning activities
Stage 1: Recognizing the Deviant Social Practices in the text	▪ Students read literary texts that contain deviant social practices. ▪ Students identify the deviant social practices in text through the guiding question that have been provided by their teacher. ▪ Students read materials related to the issue of the deviant social practices.
Stage 2: Responding to the Deviant of Social Practices in the Text	▪ Students discuss in groups and give some response to social practices in the text. ▪ Students discuss in groups to offer some response whether they have or have not encounter events described in the text in daily life. ▪ Students discuss in groups to offer some response about what they will do if they experience such events. ▪ Students discuss in groups to assess whether the solution drawn by characters in the face of these problems is correct or not
Stage 3: Having a Dialogue	▪ Students and the teacher are having a dialog to reflect on all the students' response to social problems revealed in literary texts that they read ▪ The teacher appreciates students' response and provides reinforcement
Stage 4: Communicating Personal Response in Essay Form	▪ Each student writes his/her personal response to the social practices in the text in the form of a simple essay. ▪ Each student edits and revises the essay that they have written.

III. METHODOLOGY OF RESEARCH

A. Research context and participants

This research was conducted in one of junior high school in Malang, namely SMPN 3 Malang, in the grade 7. The subjects of this research are 25 students. The research is focused on literary texts, especially short stories. This research is integrated with literary learning schedule conducted by teachers in the classroom, so as not to interfere with the teaching-learning process that has been designed by the teacher. Researchers collaborate with Indonesian language teachers to carry out this research project. Researchers and teachers jointly carry out the teaching and learning activity by following the four stages of creative dialogue learning (revision).

B. Procedures

The study was conducted for 4 weeks, but not consecutively because it follows the schedule determined by the teacher. Within a week there are two meetings. In week 1, the selected short story text is a text related to bullying problem. The selected short story is titled Violina's Musical Scale (*Tangga Nada Violina*) [2]. At week 2, the selected text is a text containing gender bias issue. The selected short story is titled Shivering Dining Table (*Meja Makan yang Menggigil*) [19]. In the 3rd week, the selected short story text is a text that contains problem of domestic violence. The selected short story is titled The Story of Kedasih [6]. In the fourth week, the selected text is titled Jakarta by Tjitrawasita [8]. Procedures of activities in each week are carried out in accordance with the four steps defined in the creative dialogue learning (revision), namely (1) recognizing the deviant social practices in the text, (2) responding to the deviant of social practices in the text, (3) having a dialogue, and (4) communicating personal response in essay form.

C. Data collection and analysis

The data were collected by asking all of the subjects of this study to read the specified short story, identifying deviant social practices in the text and responding; the students' responses deepened through dialogue, where the dialogue is linked to the phenomenon of deviant social practices existing in the text with those present in everyday life in the student environment, then the students write down their critical attitude to the deviant social phenomenon in the form of short essays. This research data is in the form of students' critical responses to deviant social practices that exist in the text and that exists in their daily life expressed by students through creative dialogue and simple essay. Data were analyzed by using spiral process, i.e. describing, classifying, and interpreting.

IV. FINDINGS AND DISCUSSION

The focus of this research is what deviant social practices most students find in their environment and how students' critical responses to such deviant practices are. In accordance to the focus of the study, the findings of this study were divided into two, namely deviant social practices found in students' environments and students' critical responses to deviant social practices in their environment or in readable texts.

A. Deviant Social Practices That Students' Encounter In Their Environment

The findings of the study indicate that the most deviant social practices found among students in their environment are domestic violence and bullying. Some examples of deviant social practices that students find in their environment, expressed by students through creative dialogue, are presented in Table 2 below.

TABLE 2. EXAMPLES OF DEVIANT SOCIAL PRACTICES STUDENTS FIND IN THEIR ENVIRONMENT

Students' Name	Question/Dialogue	Students' Response
Khoridia Anisa	▪ In your everyday life, have you ever encountered such deviant social behavior similar with	I have. I have a very tortured neighbor because of her husband's abusive behavior. My neighbors are fighting every day and his wife is always being the victim.

	what you have read in the short stories? Tell me if you have!	Sometimes she is beaten, her hair pulled, and dragged.
	▪ Did you watch the event personally?	Yes, I often play with their son, so I've seen it myself.
	▪ Is there anything else you know about that event?	Yes, I heard suddenly that the husband and wife had a big fight inside a room, accusing each other with harsh words, and then there was physical violence to his wife.
Kharisma YN	▪ In your everyday life, have you ever encountered such deviant social behavior similar with what you have read in the short stories? Tell me if you have!	Yes I have. There is a family who think the father has special privileges in the family
	▪ What do you mean by special privileges?	According to their tradition, it was the father who should eat first. If the children or mother eat before the father then they are considered rude or do not appreciate the father as head of the family.
	▪ Do you know the family's reaction to the tradition?	Yes, his son (my friend) often tells me that he feels tortured by the rules.
Eka Nefi	▪ In your everyday life, have you ever encountered such deviant social behavior similar with what you have read in the short stories? Tell me if you have!	I have. There's a male friend at my school. He is always being bullied by his friends. He is always being asked for his pocket money, his uniform ruined, being beaten, ridiculed, scolded and so forth. He can only stay still and complain to the teacher.
	▪ How did the teacher react to the event?	The teacher did not respond very much, because it was considered as something normal.
	▪ How did you feel after seeing that?	How unfortunate the child is. It is pitiful. Why does he still befriend those who bullied him when there are many other friends that are much better?
M David Mahmudi	▪ In your everyday life, have you ever encountered such deviant social behavior similar with what you have read in the short stories? Tell me if you have!	I have. In Indonesia, many children have become house servants and are often tortured by their employers.
	▪ How do you know?	From television, social media, newspapers.
	▪ How did you feel after seeing that?	Sad, why didn't they fight back?
David	▪ In your everyday life, have you ever encountered such deviant social behavior similar with what you have read in the short stories? Tell me if you have!	Yes, my father was snapping at my sister because she made a mistake.
	▪ What did your sister do?	Look down and then cry. Then she did not want to leave the room.
	▪ How did you feel after seeing that?	I was sad for her, but I didn't dare to disturb her.

B. Student's Critical Response to Deviant Social Practice in Their Environment

Students' critical responses when asked to respond to deviant social practices that exist in their environment in the form of short essays are diverse. Students' critical responses are diverse, i.e. arguments, criticisms, and suggestions. Examples of students' critical responses to deviant social practices in their environment / their experience can be seen in Table 3 below.

TABEL 3. STUDENTS' CRITICAL RESPONSES AGAINST DEVIANT SOCIAL PRACTICES IN THE ENVIRONMENT / THAT THEY EXPERIENCE

Student's Name	**Form of Response**	**Examples of Critical Responses in Brief Essays**
Ananda Pratiwi	Argument	When night comes, I often cry, tears flowing remembering my friends' remarks about myself. I am beautiful-looking, has shapely-white nose, waist-long hair with curly shapes. However, my height is the only thing that has become the stuff of joke for my friends. They call me a Beautiful Dwarf. Do my friends not understand that their words are like knives that can slice and hurt others? So easy they said that I'm like a pretty dwarf. Doesn't that make my confidence weaken? My tears show my regrets why I was born this way. My judgment changed 360 degrees after I vaguely heard a song telling that no one has the right to judge who we are but ourselves. Happiness does not come from other people, the happiness lies in our mindset. If we are grateful for what God has given and believe that that is the best for us, then there will be no regret. Slowly I woke up, I think about every word written in the song. Yes it is true, indeed we are the determinants of our own happiness not others.
Sulistyaning Pawes Tri Utami	Argument	Do not think that people who have shortcomings have no merit. But instead.... a person who has the deficiency must have and will show his various good features. Behind one's disadvantages, there are still thousands of privileges.
Yoga Saputra	Criticisms	News of employers' atrocities to domestic workers is often I see on television and in social media. So is the violence of senior to junior which is often viral in social media. The cruelty of the employers to their domestic workers does not only happen in this country, even abroad, phenomena like this also happen. We often see news of women workers who work for years abroad, go home without salary and have physical disabilities due to the atrocities of their employers or even go home nameless and without salary. Employers only exploit the domestic workers. Exploitation is also done

		by parents who should love and protect their children but instead rent or sell their children, or turn them into a beggar. I wonder why many children like to hurt their friends or others, do they not think about the impact suffered by those who are hurt? Why are people or perpetrators of violence in cyberspace increasingly prevalent? I also wonder why many employers have no compassion for the domestic workers who prepare all their needs every day. Why do many children grow up to be those who torture their own friends out of envy and jealousy? Would they be proud of their sneaky ways to achieve their goals?
Puji Lestari	Suggestions	I hope that teachers do not ignore even the smallest report from his students. If ignored, the perpetrators of bullying will be increasingly more rampant. Do not wait for the victim to fall, teachers should be attentive to bullying and to anticipate the terrible events that befall their students. Physical violence to a fellow junior high school student which is viral in social media today may be due to the teachers ignoring the reports.

From the data above, it can be seen that through the dialogue between teacher-students, students disclose the deviant social practices that exist in their environment, especially in the family and school environment because that's their immediate environment every day. Domestic violence i.e. fights between mother and father, bullying at school. Students recognize deviant social practices in their environment and students' emotions are also involved to contemplate solutions to such deviant social practices, for example by the emergence of questions: why they do not want to fight back, why they do not want to run, why they have no heart, etc. From the data, it can be said that through interactive dialogue of students not only honed his cognitive skills but also honed his emotional and social sensitivity. Actively, students are invited to discuss social issues that exist in the environment. This is in line with the opinion of Misson and Morgan [15] which states that student involvement with text, be it drama, song, film, or short story texts, not only hone the intellectual / cognitive abilities of students but also hone their affective abilities.

Junior high school students need to have their critical awareness cultivated to the social facts with the added flavor of the author's imagination, and then the students are asked to compare or associate them with concrete facts in everyday life, after which the student do reflection. The ultimate goal is for students to identify, be sensitive, be concerned about societal problems in their environment and contribute to providing the best solution to the phenomenon. The result of this growth of critical awareness is to give contributions to the social changes along the lines of power relations in the communication process [16].

Social skill, a skill to interact with others directly and deeply to understand what they are feeling and to provide responses and solutions to the problems faced by others, is an important skill that must be raised on the younger generation of the digital age and generation Z. This is because the younger generation digital/z era tends to lack social skills and have low attention spans to social problems [13]. Therefore, teachers need to provide serious attentions to this problem and design activities that can foster critical awareness to the social practices around them.

The above data also shows that through the interactive dialogue, junior high school students can give aesthetic critical responses to the social deviant practices that surround them. Their critical responses are also quite diverse, some of which give responses in the form of touching arguments, formal arguments, criticism, and suggestions. The findings also show that the stages of creative dialogue can encourage students' productive and creative actions. This is understandable because social issues in texts linked to the social irregularities in their environment can trigger constructive actions to address social problems. This is in line with the findings of Misson and Morgan [15] which suggest that the creative stages in the Compoy creative dialogue learning model can encourage the growth of constructive and creative actions in addressing the social issues discussed in the classroom. Social issues discussed in the classroom trigger the growth of attitudes and increase students' awareness of their position in addressing these social problems.

V. CONCLUSION

A. Summary of the findings

The findings of the study indicate that the most disturbing social practices found among students in their environment are domestic violence and bullying. Students recognize deviant social practices in their environment and students' emotions are also involved to come to the solution of such deviant social practices. Students' critical responses are diverse, i.e. arguments, criticisms, and suggestions. The findings also show that the stages of creative dialogue in the creative dialogue learning can encourage students' creative and productive acts. This is understandable because social issues in texts linked to the social irregularities in their environment can trigger constructive actions to address social problems.

B. Implications of the research

Based on the above explanation, Creative Dialogue Learning Model needs to be continuously applied in learning. Implementation of creative dialogue learning model is required to foster students' critical awareness of social practices in a text, relate it to the social reality around them, and also contribute in finding the best solution to the problems of social culture conveyed by the author in the text. Due to those statements, conventional learning with tasks that rely on the question of what, when, and how is no longer appropriate because the answers to these questions can be easily obtained by students by simply typing the keywords on their smartphone. Learning tasks should enable their critical responses that trigger real problem solving that surrounds the student. Therefore, it is necessary to apply Creative Dialogue Learning Model that can be used to foster critical awareness of

junior high school students (SMP), so that high school students are not alienated with the problems in their environment and are involved in finding solutions.

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Enhancing Students' Resilience: Comparing The Effect of Cognitive-Behavior And Strengths-Based Counseling

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***Abstract*—This randomized control trial study was aimed to compare the effect of cognitive-behavioral counseling and strengths-based counseling models towards the resilience students. The 99 students participants of the study were assigned randomly into three different conditions as follows; 32 students in cognitive-behavioral counseling group; 33 students in the strengths-based counseling group; and 34 students as the waiting-list control. The data was gathered by using the 14 items of the psychological resilience scale. The data of the study was analyzed using RM-ANCOVA. The results of the study indicated that: (1) there are statistically significant of enhancing the resilience of both participants in cognitive-behavioral counseling and strengths-based counseling group, and (2) the resilience of the students in the cognitive-behavioral counseling group is significantly higher than students in the strengths-based counseling group or in the waiting-list control group. The conclusion is that the cognitive-behavioral counseling is more effective than the strengths-based counseling model.**

***Keywords—resilience; school counseling; cognitive-behavioral counseling; strengths-based counseling*.**

I. INTRODUCTION

Struggles and obstacles encountered by students in following academic and social life activities are likely caused depression. If they cannot handle it properly, it can give a negative impact on their academic results and psychological development[1].

A number of previous studies had found that human can successfully manage their obstacles. This process is called with resilience [2,3]. A new perspective gives an analogue for resilience as a protective shield to prevent any damage to individual psychological health and happiness[4,5].

In educational scope, resilience is defined as a positive capability of the students to be a success in academic and life despite any difficulties that might be encountered[6,7,8,9,10]. The result of the previous studies also shows that students with high resilience are associated with higher academic achievement[11,12,13,14].

The resilience of the students can dynamically develop through their interaction with environments[15]. It can also be done through the education which facilitates the students to develop their cognitive, social and emotional skills and abilities [16,17,18]. Reformulating the school curriculum in order to support the development of students' resilience and psychology healthiness is needed. One of the foundations to grow students' resilience at school is by establishing the role of school guidance and counseling[19]. Therefore, we need to examine the most effective model, strategy or method that can be used to achieve the goal.

The intervention from counseling or psychological therapies based on cognitive-behavioral is the most typical model to be used in the integrated educational program or extra-curricular activities at school [20]. Cognitive-behavioral therapy (CBT) which was developed by Aaron T. Beck, is a counseling model focused on the treatment for psychological problems, such as depression and anxiety[21]. In the previous studies show that the cognitive-behavioral therapy is useful to cure the students from the panic attack, insomnia, depression, phobia and many others[22,23,24]. Also, it was shown that the positive effect of cognitive-behavioral counseling model can be preserved after the intervention was terminated [25,26,27].

The current 21st-century paradigm of school guidance and counseling services is no longer focused on curing the psychological problems of the students, but to develop the students' potencies that can be used as an asset or power to help them achieve best, especially in academia [28]. It is called as a comprehensive and developmental school guidance and counseling [29,30].

Strengths-based counseling model is focused on the efforts to support students in developing internal and external sources to be optimum and gaining success in academic and life [31,32]. This model is relatively new in school counseling practices [33,34]. The emergent of this model hales from the theory of positive psychology and integration of theories which views students as the individual with potencies and sources [35]. Strengths-based counseling is aimed to substitute the traditional counseling model which focused on deficit

condition and problems in individual mental illness and symptoms and be cured by remedial and clinical treatment with the counselor as the centre of the activities [36,37].

The meta-analysis study revealed that there are 12 variants of interventions developed based on the positive psychology [34]. In accordance with that, the previous study also found that the effectiveness of strengths-based counseling model is still limited [20]. Therefore, a further study on this topic is needed.

The model of strength-based counseling is carried out by ten steps of counseling strategy which is integrated from the theories of strength, positive psychology, need and motivation, logo, and resilience theory [38]. This model is also supported by the psychological techniques which focused on the development of students' potencies and powers. It is predicted that the different perspectives and techniques between cognitive-behavior and strengths-based counseling can be contributed to different effect towards the students' improvement on the resilience.

II. METHOD

This experimental research used control trial randomized design, conducted in three groups, namely cognitive-behavioral counseling group, strengths-based counseling group and waiting-list control group.

A. PARTICIPANTS

The population of this study is the seventh-grade students of SMP Lab. UNDIKSHA and SMPN 3 Singaraja (12-years-old in average) in academic year 2016/2017. From the total of 284 students who followed the resilience measured, 102 students were chosen based on the criteria of having low and moderate resilience. Initially, the sample was assigned to three groups of conditions, each group composed of 34 students in cognitive-behavioral counseling, strengths-based counseling and the waiting-list control. Two students in cognitive-behavioral counseling model have not completed the eight 55-minutes counseling session and therefore we only count 32 participants there (21 girls and 11 boys).

The number of participants who fully followed the strengths-based counseling model is 33 students (15 girls and 18 boys). In addition, there are 34 students (15 girls and 19 boys) in the waiting-list control group. Therefore, the total number of participants in this study are 99 students (42 girls and 57 boys). The recruitment and retention of the participants in the study as shown in figure 1.

B. INSTRUMENTS

1) Cognitive-Behavioral Counseling Protocol

The cognitive-behavioral counseling is implemented based on the protocol of the cognitive-behavioral counseling procedures in the school context[39]. The integration of the cognitive and behavioral theories is considered as the major technique of the rational-emotive counseling by Ellis[40], which aims at formulating the counseling techniques which focused on the development of a person's way of thinking, feeling and a new effective behavior which indicates high resilience.

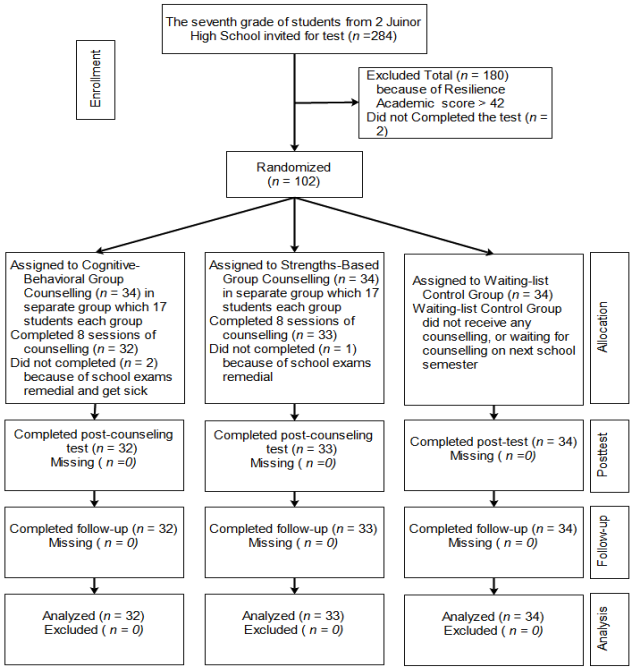

Fig. 1. Recruitment and Retention of the Participants in the Study

The focus of the cognitive-behavioral counseling in the recent study is to train the students in order to change their negative thinking that leads them to the distraction of their self-development in order to be a positive thinking that can help them to feel healthy and happy, physically and mentally. In harmony with it, this counseling model concern about how to manage the distress and difficulties encountered by a person, in the past or in current live[21,23]. The cognitive reconstruction is applied by involving the self-talk analysis and ABCs exercises[41,42]. Furthermore, to handle the student's distortion, a relaxation also be used to manage their anxiety, panic, fear and worry.

Participants in this group are also trained employing socio-drama and role-playing techniques which focus on improving social skills, especially for communicating, working together and showing empathy to others; whereas brainstorming and group discussion techniques are used to encourage problem-solving and decision-making skills. Furthermore, the assertive training is applied to develop skills dealt with social conflicts and to decrease social anxiety. This counseling procedure integrates cognitive, behavioral and rational emotive counseling strategies into a formulation of counseling procedures have similar to that of the Penn Resilience Program [43,44].

There are three steps of cognitive-behavioral counseling, including preliminary, main and terminating [21,23]. The preliminary step is done by creating the counseling relationship and identifying students' condition. In the main

step, the focus is on these three activities: (1) assessing students' current ability and condition, (2) creating an agreement which counseling technique that will be used, and (3) implementing the selected techniques. Last, in the terminating step, are as follows: (1) resuming the counseling results, (2) evaluating the students' homework from outside the counseling session, and (3) giving feedback a positive reinforcement.

2) Strengths-Based Counseling Protocol

Strengths-based counseling protocol in the current study is adapted from Smith [38]. This model integrates the positive psychology and resilience, strength, desire-fulfillment, need and motivation, and also supported by the psychological techniques which focused on the development of students' potencies and strengths.

The steps used in strengths-based counseling model as follows: (1) creating a warm and positive counseling relation, (2) identifying the powers of students, (3) assessing and serving the problems, (4) motivating and encouraging the students' hope, (5) drawing the solution, (6) building the students' strength and competencies, (7) empowering, (8) changing (through the process of defining and framing), (9) building the resilience and (10) evaluating the results of counseling and finishing.

3) Resilience Scale

In this study, resilience is defined as a dynamic process of students' ability to adapt positively with obstacles, struggles and difficulties to successfully achieving optimal academic outcomes. Resilient students are characterized by a set of capabilities, namely social competencies, problem-solving skills, self-efficacy, self-awareness, and goals aspirations [15]. The level resilience of participants in this study was measured by the Indonesian version of California Healthy Kids Survey (CHKS) psychological subscale for junior high school students. The construct validity of the scale was examined by Exploratory Factor Analysis (EFA) procedure[45]. From five cycles of EFA procedures, there are 14 used from 18 original items to measure five dimensions of resilience, including social skills, self-efficacy, problem-solving, self-awareness and goals. The Alpha Cronbach's from these 14 items test is 0.777.

The participants of the study choose one of the four alternative responses for each item, which are: (1) not true, (2) a little true, (3) pretty much true, and (4) very much true. While score 1 is given for the not true, score 2 for a little true, score 3 for pretty much true and score 4 for very much true responses[46,47].

C. PROCEDURE

The students in experimental groups followed counseling during the study, while the students in the waiting list control group were not. However, the students in waiting list control group will be given the treatment after the study for an ethical reason [46]. Each of the counseling group (cognitive-behavioral and strengths-based) followed eight session treatments with 55 minutes time allocation.

The group format of counseling had been chosen to give the students an experience to interact with others and to effectively support each other in learning[47]. There are four counselors involved in this research (each counseling model with two counselors). These selected counselors are based on the criteria of having at least 10 years experience in minimum. They also need to follow training sessions to do counseling as is provided in counseling model protocol.

D. Data Analysis

To examine the effect of treatment for both of the experimental groups and the control group, statistical analysis using General Linear Model (GLM) 3×2 Repeated Measures Analysis of Covariance (RM-ANCOVA).

The interaction between pretest and groups also be checked from the homogeneity regression slopes. The comparison of effectiveness between groups is evaluated using the interaction between groups and time. The results which related to the major effect of the groups and time were also reported. The effect size and partial eta squared ($\Pi^2_{partial}$) were evaluated for each effect and estimated parameters. The score on $\Pi^2_{partial}$ illustrated the proportion of total variation caused by involved factors[48]. The Comparisons of the adjusted mean of resilience among the groups were tested using Bonferroni test. All of the aforementioned processes are done by using SPSS V. 22. The significance level used in the present study is 0.05.

III. RESULTS

In the following Table 1, the stable and significant improvement of resilience score of the students in cognitive-behavioral and strengths-based counseling model is given.

TABLE I. RESILIENCE SCORE MEANS AND STANDARD DEVIATION IN COGNITIVE-BEHAVIORAL COUNSELING, STRENGTHS-BASED COUNSELING, AND WAITING-LIST CONTROL GROUP IN THE PRETEST, POSTTEST, AND FOLLOW-UP STAGES

Time	Group Condition		
	Strengths-based Counseling (n=33) Mean (SD)	**Cognitive-behavioral Counseling (n = 32) Mean (SD)**	**Waiting-list Control (n =34) Mean (SD)**
Pretest	29.93 (2.99)	29.87 (3.18)	29.91 (3.18)
Posttest	45.8 (2.99)	47.9 (3.4)	31.8 (2.97)
Follow-up	48 (1.29)	51.56 (1.48)	30 (1.72)

The score in the cognitive-behavioral group is increasing 18.06 (5.43) from pretest to post-test and 21.68 (3.49) from pretest to follow-up stage. On the other hand, the score in the strengths-based counseling group is increasing 15.87 (3.41) from pretest to post-test and 18.06 (3.27) from pretest to follow-up stage. The aforementioned results confirmed the second and the third hypotheses of this study.

In addition, there is no significant interaction effect between groups and pretest as is shown in Table 2 ($F[2, 93) = 3.023$, $p = 0.053$ ($p > 0.05$). It is indicated that the relation between control variable and dependent variable in each group

are not significantly different, therefore the assumption for homogeneity regression slopes is adequate. It is also found that the major effect of the group treatment is significant ($F[2,93) = 11.651$, $p < 0.05$, with effect size on $\eta^2_{partial} = 0.200$). Meanwhile the major effect of the pretest were not significant ($F[1,93) = 0.449$, $p > 0.05$, with effect size on $\eta^2_{partial} = 0.005$).

TABLE II. THE MAIN EFFECT OF GROUP AND INTERACTION EFFECT BETWEEN GROUP AND PRETEST WITH REPEATED MEASURES ANCOVA

	Sum of Squares	df	Mean Square	F	p-value	$\eta^2_{partial}$
Intercept	3811.224	1	3811.224	543.317	0.000	0.854
Group	163.460	2	81.730	11.651	0.000	0.200
Pretest	3.151	1	3.151	0.449	0.504	0.005
Interaction effect between Group and pretest	42.404	2	21.202	3.023	0.053	0.061
Error	652.370	93	7.015			

In Table 3, the major effect of time (two level of time: post-test and follow-up) to the resilience is not significant ($f[1,93)= 1.360$, $p = 0.247$, with effect size on $\eta^2_{partial} = 0.014$). Meanwhile, the interaction effect between time and groups is significant ($F[2,93) = 0.417$, $p < 0.05$, with effect size on $\eta^2_{partial} = 0.087$). In addition, there is a significant interaction effect between time, group and pretest ($F[2, 93) = 5.930$, $p < 0.05$) with effect size on $\eta^2_{partial} = 0.113$).

TABLE III. THE MAIN EFFECT TIME AND INTERACTION EFFECT BETWEEN TIME, GROUP, AND PRETEST WITH REPEATED MEASURES ANCOVA

	Sum of Squares	df	Mean Square	F	p-value	$\eta^2_{partial}$
Time	6.009	1	6.009	1.360	0.247	0.014
Interaction effect between time and pretest	2.202	1	2.202	0.498	0.482	0.005
Interaction effect between time and group	39.044	2	19.522	4.417	0.015	0.087
Interaction effect between time, group, and pretest	52.422	2	26.211	5.930	0.004	0.113
Error	411.052	93	4.420			

The results as shown in Table 2 and Table 3 confirmed the first hypothesis of this research, which stated that there is the statistically significant difference of students' resilience between the cognitive-behavioral, strengths-based and the waiting-list control groups.

The fourth hypothesis of this research is confirmed by testing the means of scores for each group using comparisons of adjusted means from Bonferroni test. The summary of it can be seen in Table 4.

The results showed that means of resilience's score of students who followed the cognitive-behavior is higher than the students who followed the strengths-based, with score difference equal to 2.840, $p < 0.05$. Also, the means of resilience's score of the students in cognitive-behavior counseling group is higher than the students in control group, with score difference equal to 18.831, $p < 0.05$. Furthermore, the means of resilience's score of students in strengths-based counseling group is higher than the students in the control group, with score difference equal to 15.992, $p < 0.05$.

TABLE IV. COMPARISON OF RESILIENCE MEANS SCORE BETWEEN GROUPS WITH BONFERRONI ADJUSTMENT TEST

				95% Confidence Interval for Difference [b]	
(I) Group Factors	(J) Group Factors	Mean Difference (I-J)	p-value	Lower Bound	Upper Bound
Strengths-based	Cognitive-behavioral	-2.840*	0.000	-3.972	-1.707
	Control	15.992*	0.000	14.876	17.108
Cognitive-behavioral	Control	18.831*	0.000	17.707	19.956

Based on estimated marginal means
*. The mean difference is significant at the .05 level.
b. Adjustment for multiple comparisons: Bonferroni.

IV. DISCUSSIONS

The findings of this study have confirmed the findings of related previous studies, which stated that the cognitive-behavioral counseling model is effective to improve the psychological competencies (i.e, resilience). This model is also known as the effective treatment to give intervention or to prevent or to cure the psychological problems encountered by students to help them gaining success in their education, career and life. Some countries (such as USA, UK, Australia, China and Portugal) are already implementing the cognitive-behavioral counseling model as a treatment in schools to improve the resilience of the students through a program called PRP [34]. The effectiveness of the implementation of PRP can be reflected from the improvement of resilience score, prevention of depression and development of all aspects of the students[25,43,49,27,50].

There is also a study of the feasibility and effectiveness of the psychosocial intervention of the resilience training group called READY, based on the acceptance and commitment therapy (ACT) strategy and cognitive behavior therapy [51]. The result of the study showed that the READY program is feasible and effective to be implemented as a training of resilience improvement in the group setting to encourage the students' psychosocial well-being. In addition, the FRIENDS program also showed effectiveness in handling the students' fears, anxieties and upsets through the development of emotional resilience and self-esteem [52,53,54].

The previous studies as in PRP, FRIENDS and READY programs, mostly focus on the measurement of model effectiveness to transform the symptoms or behaviors that reflect the psychological problems, such as depression,

frustration, drug addiction, eating disorder, etc.[22,23,24]. In the current study, the intervention results were measured based on the improvement of resilience, as one of the positive attributes of students' psychological conditions. Therefore the findings of the current study can be used as a support to establish the appropriate counseling or therapy model in cognitive-behavior psychology. It can benefit, not only to manage the psychological problems or distress but also to develop the positive aspects of students, for instance, resilience, happiness and psychological well-being[55,56].

It is also revealed that the cognitive-behavior counseling has higher effectiveness compared to strengths-based counseling model towards the improvement of students' resilience. This result is contrary to the study which found that there is no difference between the effectiveness of cognitive-behavioral and positive psychology intervention[57]. Meanwhile, the other study underlined that the positive psychological therapy is more effective than the cognitive-behavior therapy in order to increase the happiness level[58]. They also concluded that both of the approaches significantly give different impact to the management of depression symptoms, psychological well-being, happiness and mental distress.

Basically, the current research also supports empirical evidence about the effectiveness of strengths-based counseling model using the steps developed by Smith towards the improvement of resilience, even though the increasing score is lower than the score from cognitive-behavior counseling model. However, this study is relevant to a number of previous studies which stated that the positive psychology programs are significantly effective to students' development[59,60,61,62].

As a remarkable note to close, we acknowledge some strengths and limitations of this study. This study enriches the novelty and findings in the present topic. On the other hand, this study is limited in the number of subjects, since it only involved the seventh-grade junior high school students from two schools at Singaraja, Bali. Also, several uncontrolled factors may impact the resilience of the students, such as gender, social-economic condition, intelligence and other factors. Therefore, the generalization of this study needs to be considered. The result of this study can imply practically and theoretically to the development of psychological intervention model used in the school environment. The strengths and limitations of the study can be useful information for the prospective researchers in the related topic.

V. CONCLUSIONS

The results of this study show there are significant differences in resilience after counseling and after five weeks of counseling among students in cognitive-behavioral counseling group, strengths-based counseling group and students who do not follow any counseling or control group. After counseling and five weeks after counseling, students in cognitive-behavioral counseling group with significantly have a higher resilience than students in the strengths-based counseling group. Then, students in strengths-based counseling group have a higher resilience than students in the waiting-list control group. Basically, the recent study shows that the cognitive-behavioral counseling and strengths-based counseling is equal effectively to enhance the resilience of junior high school students. The higher effectiveness is showed by cognitive-behavioral counseling.

The results of this study have implications in practice of the school guidance and counseling in order to develop a student's resilience. The strengths and limitations of this study have a valuable information for the next researcher who has an interest in conducting the related topic. Based on the findings of this study suggested to the school counselor to implement the cognitive-behavioral counseling in which it can be integrated with the principle of strengths-based counseling model in order to improve students' resilience.

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Basketball Learning Using Media-Based Animation

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***Abstract*— The aim of this research is to know the influence of animation media towards the basic technique of overhead pass in basketball. The method of this research is experimental method. The population and sample used was the students of junior high school namely SMPN 8 Cimahi in 2016-2017 academic year which consisted of 20 students. The sample was taken using purposive technique sampling. The instrument used is overhead pass technique in basketball test. The result and conclusion are follows: 1) Learning using three dimension animation gives significant influence towards overhead pass skill in basketball. 2) Learning without using three dimension animation gives significant influence towards overhead pass skill in basketball. 3) Learning using three dimension animation gives more significant influence towards overhead pass skill in basketball.**

***Keywords*— overhead pass; basketball; animation media**

I. INTRODUCTION

Basketball is a simple and easy to learn game. If a basketball player applies the exercise pattern well (discipline) in order to form teamwork, he is able to master the skill of playing basketball. This game provides several complex matters to the audience such as dribbling, various shooting, mobility, and trickery movement. Basketball is a game which deals with the speed of feet and hands of a player and the efficiency of body in exact time [1].

Basketball has a variety of complex basic technique. Those basic techniques consist of combination of coordinated technique's element. There are several basic techniques that should be mastered by basketball players such as passing, dribbling, shooting, lay up shoot, pivot, jumping, fakes and faints and keeping the opponent [2]. To reach maximal result in basketball, these are needed: catching, dribbling, passing and shooting techniques [3]. This indicates that basketball consists of several techniques, such as passing, catching, dribbling and shooting. Those techniques must be mastered to perform good quality in playing basketball.

Passing in basketball is said as the heart of playing basketball. Good game can be constructed by the result of accurate passing. Generally, passing can be executed fast and tough, but still under control. The kind of passing depends on team's position, timing and tactics.

There are many kinds of shooting in basketball [4] namely chest pass, bounce pass, overhead pass, side arm pass, baseball pass and behind the back pass. All of those techniques are usually used by player in beginner level.

Overhead pass is passing given by holding the ball over the head and throwing it to closer player in the same team. This passing is used to those players who have high posture and play against short players. By using overhead pass, the player is able to save the ball if there is an opponent in front.

Overhead pass is appropriately executed when the player is tightly kept by the opponent but the ball must pass through the opponent. This passing is one of ways to escape from opponent's guarding by taking advantages on the low post of opponent.

Overhead pass is started by positioning the balance body. Then, hold the ball over the head. The elbow is in 90^o position. When doing overhead pass, do not bring the ball to the back of the head since it will make the passing difficult. The opponent will be easier to grab the ball. Use the maximal power of foothold and pass the ball quickly. At the moment, the fingers face towards the target and the palm faces downward.

The basic techniques in doing simple overhead pass are follows:

- Hold the ball in the beginning position over the head, a little in front of forehead and the elbow is folded.
- Throw the ball with the wrist rather faces downward while straightening the arm.
- Let the ball free by strengthening the fingertips.

Based on the researchers' observation, there are three passing techniques that usually used in high school. They are chest pass, bounce pass and overhead pass. Unfortunately, many students still are not able to do overhead pass. Many factors influence their performance such as making mistake in positioning foot, body and hands when executing the technique. Besides, it can be caused by inappropriate teaching method and less media which make the students have lack of interest in learning. The students tend to be less focus when studying so the aim of learning doesn't achieved well.

The learning process is influenced by some matters such as the environment, the teachers, parents, textbook, film, video and etc. The development of science and technology encourage the renewable efforts in employing the result of technology. Those would help the learning process. The teacher should be able to use the available tools in school. Especially with physical education teacher which expected to be able to make use of those tools and modify unavailable ones.

The word "media" comes from Latin "medius" means mediator or deliverer. In physical education subject, the teachers can deliver the materials through newspaper, magazine, radio, television, film, OHP, pictures and etc. [5]

In learning process, the message delivered by media from the source to the target is learning material. On the other word, the message is the content of learning from the teacher to the students. This complex message must be stimulated precisely in order to have good communication. The presence of media makes the students easy to receive the learning material from the teacher.

Therefore, the use of appropriate media is recommended in learning process. Learning media can be interpreted as something that can be applied to transfer message and stimulate students' thought, feeling, attention and willing to learn [6]. This is useful to ease students in receiving material or information. Basically, learning media is useful for students to make them easy in understanding something difficult or simplifying something complex [7].

The advantages of learning media in learning process are as follows [8]:

- Learning process is able to attract students' attention and it will grow motivation to learn.
- The material will be more explicit so it will be easy to understand by the students.
- There would be variety of learning methods. Not only verbal communication but also some new materials will help the teachers.
- The students will be actively doing learning activity for example observing, conducting, demonstrating, role playing, etc.

The teachers should present to provide the material by the help of any media to realize these following advantages:

- Enhancing students' sympathy and understanding
- Changing students' behavior
- Displaying the changes in subject and students' need
- Bringing the experience for students
- Making the result of the study has more meaning
- Encouraging the active participation of students
- Giving needed feedbacks
- Completing students' experience with concept
- Expanding students' knowledge
- Convincing students' clearness that construct the fundamental

There are many kinds of media such as printed media (books, journals, newspaper, magazine, etc.) and electronic media (radio, television, computer, gadget, etc.) In this research the researcher emphasizes the use of audio visual media. Audio visual media displays picture and sound altogether when communicating message or information. Video can be classified as audio visual method. Physically, video is different with film but still has same function for example to display moving picture.

Video is used as entertainment media and educational media. This media is able to reveal an object and event like a real condition. Good preparation in using video will produce effective communication in learning. The use of video in animation form or character such as cartoon will be used to display the motion and how to execute the basic technique of overhead pass in basketball.

The research about the use of animation media is already applied in some subjects. For example, the research conducted by Ninuk Wahyunita Sati and Ahmad Sanawi entitled "The Influence of the Use of Animation Media towards the Study Result in Science Subject to Slow Learner Students". The result revealed that there is significant influence from the use of animation media towards study result in science subject to the slow learner students in elementary school Brawijaya Smart School Malang.

Then, the other research arranged by Warni I Ayubi entitled "The Influence of Learning Media Animation Film towards the Students' Study Result (An experimental research in tenth grade of Prasetya Gorontalo senior high school). The result showed that the value of derived t is bigger than t table (6.366 > 1.676). This means there is a difference between students' study result which was given treatment film animation with power point.

The next research conducted by Mukhlishoh with the title "The Influence of Animation Film Media towards Students' Motivation in Learning Science Subject (case study in Islamic school namely An-Nur Cirebon). The result is about the linier relationship between the variable of animation film media and students' motivation in learning.

Therefore, the researchers interest in conducting research entitled "Basketball Learning Using Animation Media-Based" The aim of this research is to know the influence of animation media towards overhead pass in basketball.

This matter must be followed up by research because nowadays technology becomes a part of human's life and also in education system. Unfortunately, the use of technology is not spread evenly in each school.

There are only several schools using technology as part of their implementation in education such as international school. The researchers hoped that this research becomes the reference to convince the government, the teachers and school to start utilizing technology as part of education especially in physical education.

Besides, it is able to change teachers' paradigm that physical activities are not only involved with media such as ball, net, racket, but also audio visual media such as video. The learning media will strengthen students' respond and give the students chance to control their learning ability.

The characteristics of multimedia in learning are having more than convergent media, for example, combining the video and audio elements; interactive (has the ability in accommodating user's respond); and independent (gives the facilitation and completeness of the content so the user can employs autonomously).

II. RESEARCH METHOD

The method used in this research is experimental method because this method helps the researchers to seek the influence on one variable towards another. Experimental method is the research method used to find the influence of certain treatment towards the other in controlled condition [9]. Meanwhile, the research design used true experimental which means there is control group in the research.

The population taken was the seventh grade students of SMPN 8 Cimahi. By using purposive sampling technique, the sample chosen were the students who had motor skill under minimal criteria as many as 20 students.

There are two variables in this research namely dependent variable (overhead pass in basketball) and independent variable (animation media). The design of research can be seen in following figure:

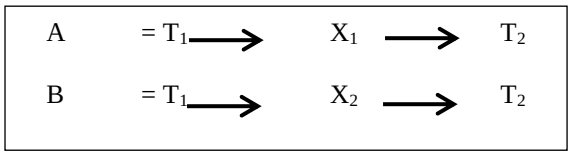

Figure 1. Research Design [10]

Note
A : experimental group using animation media
B : control group without using animation media (conventional method)
T_1 : pretest
T_2 : posttest
X_1 : treatment using animation media
X_2 : treatment without using animation media

The instrument used is overhead pass in basketball test. The treatment was conducted 16 times to both of groups. The researchers conducted these following steps in analyzing the data: 1) calculating the mean score and the standard deviation. 2) testing the requirements of data analysis (normality test and homogeneity test) and 3) testing the hypothesis.

III. RESULT

A. Mean Score and Standard Deviation

The first step conducted by the researchers is arranging the obtained data. Then, the researchers calculate the mean score and the standard deviation. The result of calculation can be seen in following table.

TABLE I THE RESULT OF MEAN SCORE AND STANDARD DEVIATION

Group	Test period	Mean score	Standard deviation
Experimental group	Pretest	16.20	1.81
	Posttest	25.00	2.91
Control group	Pretest	15.30	2.16
	Posttest	21.30	2.89

Based on the table in experimental group which was implemented audio visual media, the mean score of pretest is 16.20 and the mean score of posttest is 25.00. Meanwhile the standard deviation of pretest is 1.81 and the standard deviation of posttest is 2.91.

In control group which was not implemented animation media, the mean score of pretest is 15.30 and the mean score of posttest is 21.30. Meanwhile the standard deviation of pretest is 2.16 and the standard deviation of posttest is 2.89.

B. Normality Test

After obtaining the result of mean score and standard deviation, the next step is conducting normality test using Lilliefors. To accept or reject the null hypothesis, the researchers compared the value of derived L (Lo) and the critical value of L from Lilliefors table.

TABLE II THE RESULT OF NORMALITY TEST

Group	Test period	Lo	L table 0.05 : 10	Result
Experimental group	Pretest	0.244	0.258	Normal
	Posttest	0.151	0.258	Normal
Control group	Pretest	0.255	0.258	Normal
	Posttest	0.131	0.258	Normal

Based on the table above, from the experimental group, the Lo of pretest is 0.244 and the Lo of posttest is 0.151. Meanwhile from control group, the Lo of pretest is 0.255 and the Lo of posttest is 0.131. Those data are normal because they are smaller than L table 0.258.

C. Homogeneity Test

TABLE IIITHE CALCULATION OF HOMOGENEITY TEST

Group	F	F table	Result
Experimental group	0.08	3.18	Homogeneous
Control Group	0.04	3.18	Homogeneous

The table showed the value of derived F from experimental group is 0.08 and the value of derived F from control group is 0.04. Meanwhile, the value of F table is 3.18. Both of values are smaller than F table which means the data are homogeneous.

D. Significance Test

TABLE IVTHE CALCULATION OF SIGNIFICANCE TEST

Group	Test period	Mean score	Standard deviation	T test	t table (0.05)	Result
Experimental group	Pretest	16.20	8.8	11.00	2.262	Significant
	Posttest	25.00				
Control group	Pretest	15.30	6.0	6.52	2.262	significant
	Posttest	21.30				

The table shows the value of derived t from experimental group is 11.00. The value is bigger than t table 2.622 which means that there is significant difference in implementing animation media towards overhead pass in basketball to the students of SMPN 8 Cimahi. Meanwhile, the value of derived t from control group is 6.52. It is bigger than t table 2.262 which means that there is significant difference in implementing learning without animation media towards overhead pass in basketball to the students of SMPN 8 Cimahi.

E. SIGNIFICANCE TEST BETWEEN THE DIFFERENCE OF TWO MEAN SCORES

TABLE V THE CALCULATION OF SIGNIFICANCE TEST TOWARDS THE DIFFERENCE OF RESULT

Group	The difference mean score	T test	T table 0.05 (18)	Result
Experimental group	8.80	14.5	2.10	Significant
Control group	6.00			

The table above shows the value of t test is bigger than t table (14.5 > 2.10). The null hypothesis is rejected. The result proves that there is enhancement to the both of groups (experimental group using animation media and control group without using animation media) but there is different enhancement between those groups. Learning using audio visual media-based gives more significant effectiveness towards overhead pass in basketball.

IV. DISCUSSION

By using audio visual media-based, the students are able to learn clearly by observing and analyzing the overhead pass skill in basketball since audio visual media has an advantage on delivering message or information in creative way which display graphic, sound and clear movement. It makes the receiver are able to obtain the characteristic in real picture.

V. CONCLUSION

- Learning using animation media-based gives significant influence towards overhead pass in basketball to the students of SMPN 8 Cimahi.
- Learning without using animation media-based gives significant influence towards overhead pass in basketball to the students of SMPN 8 Cimahi. Control group which was not given treatment using animation media also gives significant influence towards overhead pass in basketball. The control group was given conventional media such as ball, and the teacher only gave the instruction.
- Learning using animation media-based gives more significant effectiveness towards overhead pass in basketball to the students of SMPN 8 Cimahi rather than learning without using animation media-based. It means that learning using audio visual media is better and gives positive impact to the students in studying basic techniques rather than those who was not given treatment using audio visual media.

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Local Wisdom Of Subak As A Model Of Character Building For Social Studies Learning In Schools

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***Abstract*— This study aimed to trace back any character values contained in local wisdom of the Balinese traditional irrigation system called *Subak* and to construct it as a model of character building for social studies learning in schools. To obtain the objective, this study made use a meta-analysis approach. The primary sources of data were all research findings which have been published in either relevant national or international journals along recent seven years (2011-2017). The data and findings of the study were analyzed and formulated by using a descriptive-interpretative technique. The finding of the study was 17 character values in local wisdom of *Subak* which was related to the national character formation. The notion of *Subak* based character building in social studies learning was applied into a model of *indoor-outdoor study*. The notion needs testing to measure the effectivity of its implementation and its constraints through further researches.**

Keywords—subak, character education, social studies learning

I. INTRODUCTION

Education has tremendously strategic roles in forming national character. Unfortunately, the education practice in schools that occurs nowadays have not optimally accommodated and integrated the development of character values. Evaluates that currently ongoing education building have not given significant outcomes in national character formation based on normative values of Indonesian nationality [1]. Competence which is developed in current education system and practice have not been balanced, still loaded with knowledge transfer, focused on text books and separated from student's potential local environment [2].

Education system and practice above are contradictive with government policy which emphasizes the developed curriculum in schools must be associated with society potentials and their local environment. The appeared effect of contradiction is apprehensive which can be seen from spreading deviant behavior of students and young generation, such as driveway, student brawl, free sex, drug abuse, alcohol, abortion and many others. Furthermore, they show some symptoms of leaving local culture to accommodate the western one. This appears in arts, fashion, favorite, appetite, entertainment, language, life style, children-parent interaction, student-teacher interaction, danger of secularism, pragmatism and hedonism.

The complexity of moral dieses and character degradation which are conducted by society and Indonesian nation implicate on the necessity of education revitalization by setting the schools not only as a teaching-learning center loaded with academic scores as it always occurs, but also setting the schools as culture appreciation and development by gaining advantages on local Indonesian various cultures that contains nation character. Along this context, education character which is grounded on local wisdom is considered prominent to be developed in education system and practices in schools.

Balinese society has various uniqueness on local culture, one of which is called *subak* system. *Subak* system refers to a traditional communal farmer organization that manages and controls irrigation water and crops planting mechanism based on philosophy of *Tri Hita Karana* (THK). *Subak* system has been determined by UNESCO as the world cultural heritage on its assessment that *subak* was born from culture of Balinese society based on the concept of *Tri Hita Karana* (THK) including local wisdom which has proved to reflect authentic outstanding universal values, one of them is a strong value as an adhesive between social and ecological conservationists [3]. The findings of scientific study of both the international and national experts show that *subak* has various universal value of local wisdom and can be gained advantages as a model of harmonic society life. Some of the uniqueness can be identified that (1) *Subak* is the most effective and sophisticated farmer organization in the world in controlling irrigation water [4] , [5], (2) *Subak* is remarked as socio-religious pattern based on *Tri Hita Karana* (THK) that contains universal values and plays roles in forming development of sustainable agriculture and principles of a good governance [6] , [7] , [8] , [9], and (3) *Subak* has plural roles as an asset of local culture conservation, an actor of social and economic life empowerment, an actor of environment conservationists organization, especially landscape and water and an actor of organization of political aspiration [10].

Though the findings of the study express various valuable local wisdom of *subak* mentioned above, in fact, it has not

been applied yet as a device of forming students' character through education practice, especially in practical teaching-learning process of social studies in junior high schools. This condition is supported by literature and empirical study showing that research and practice that were integrated local wisdom of *subak* into for social studies learning was limited in a mount. The developing the learning through local wisdom-based social studies learning is considered important due to the scope of study and laboratory of the lesson is society and their interaction with surrounding environment. Furthermore, the importance of developing social studies learning based on local wisdom of *subak* is grounded by empirical condition that the learning of the lesson in schools underwent many kinds of problems and weaknesses. The weakness of social studies learning can be seen from two side. First, from content side of view, conceptual and empirical resources that were used as references of the learning the lesson was still curriculum centered and ignored the local wisdom as its sub contents. Second, from learning side of view, the lesson was sourced from the text books, ignoring the benefit of social life and students' environment as one learning sources, especially the values of local wisdom conducted by local society so it then can bear unpowerful instrumental output. This text book could not provide any opportunity to the students to empower themselves, only focused more on the formal requirements than the real needs of students that it is of course boring and tiring. [11]

Based on the description above, it is important to conduct a research about local wisdom of *subak* as a model of education character in social studies learning in schools. Related to that, the writing of this paper is to (1) trace back character values that contains in local wisdom of *subak* and (2) propose a model of education character based on local wisdom of *subak* in social studies learning in junior high school.

II. RESEARCH METHOD

This study made use a meta-analysis approach. The main primary source of data was research finding which have been published in either national or international journals along recent seven years (2011-2017). The selection of journals was based on the consideration of (1) journals which have relevant substance to the topic and problem of the study (2) accredited national journals and international journals that have official recognition from international institutions, preferably reputable journals (indexed in *Scopus* or *Web of Science* and has an impact factor). Based on these considerations, ten journals were defined : (1) Sustainable Agricultural Development in Bali: Is the *Subak* an Obstacle, an Agent or Subject? [12]. (2) The Functional Role of Balinese Water Temples: A Response to Critics [13]. (3) Cross culture Learning: Utilizing subak as a Model of Ecopedagogy [14]. (4) Exploring Community Capital of the Balinese Subak Cultural Heritage: A Content Analysis of Participatory Maps[15]. (5) The Effect of Regional Development on the Sustainability of Local Irrigation System (A Case of Subak System in Badung Regency, Bali Province) [16]. (6) Spatial Zonation Model of Local Irrigation System (A Case of Subak System in Bali) [17]. (7) Effectiveness of the Implementation of Local Government Policy in Controlling the Conversion of Subak Rice Field Land: Case Study in Badung Regency, Bali [18]. (8) Rituals Aspek in Subak Irrigation System as World Cultural Heretage [19]. (9) Balinese Local Wisdom and Their Implication in Science Education at School [2]. (10) Changing Realities–Perspectives on Balinese Rice Cultivation [20].

The study was started by considering the problems and objective of the study and traced back the newest and the most relevant research findings. The next steps were to review, analyze, and choose the content of research findings. The further action was to conduct an interpretation, signify and formulate the findings. Data analysis and research findings formulation was conducted by using descriptive technique.

III. CHARACTER VALUES IN LOCAL WISDOM OF SUBAK

Fundamentally, local wisdom is a capital of culture belonged by local society which inherited traditionally and contains truth values, wisdom, cleverness and kindness applied as philosophical base to behave well and right in forming harmonic life [12] , [1]. Local genus has strategic roles in forming national character, that is character of Indonesian personality which is appropriate with values of Pancasila and norms of UUD 1945, diversity with the principle of Bhineka Tunggal Ika, and the commitment towards NKRI [13]. Therefore, local wisdom has significance and relevance of character building.

Studies of character values and the experts show the similarity of notion about items of characters which are considered ideal even though there are some differences. For instance, some items of character considered ideal consisted of 18 items with character values are: (1) religious, (2) honest, (3) tolerant, (4) discipline (5) hard work, (6) creative, (7) independent, (8) democratic, (9) curious, (10) national spirit, (11) love for the home land, (12) appreciate achievements, (13) be friendly/ communicative (14) love piece, (15) keen on reading (16) environmental care (17) social care, and (18) responsible. Those items of character values are considered base in trace back the character values in local wisdom of *subak* [14].

Fundamentally, *subak* is a group of society or institution that control the irrigation water and manage mechanism of crops on landscape of rice field and source of water has temples and autonomic on basis of philosophy of *Tri Hita Karana* (THK). The meaning of THK is the three ways to proceed life happiness, that are (1) *parhyangan* (creating harmony between human and God) (2) *pawongan* (harmony between human and other human), and (3) *pelemahan* (harmony between human and natural environment). Therefore, the application of philosophy of THK in all activities, subak is acknowledged as the core and the buffer of Balinese culture and excellence as a model of harmonic society that support sustainable life. That is the reason subak is declared by UNESCO as the world cultural heritage that must be protected [3], [16], [17], [18]. The character values

contained in *Subak* local wisdom can be extracted from the implementation of components of *THK* philosophy which is *pahrayangan, pawongan,* and *palemahan*.

The applying the component of *parhyangan* basically is the shape of culture represented in strong faith and belief of the members (farmers) of s*ubak* that water and rice field is creation of God therefore it must be respected and conserved well. On behalf of the, the members of subak builds holy place called *subak* temple and conduct ceremony and religious ritual. Temples and ritual activities in *subak* are conducted occasionally both individual level and *Subak* level. The ritual ceremony at the farmer level is carried out in each farmer's field. Each farmer paddy block has a sanctuary called *sanggah catu* which placed near the gate that drains the water into the paddy field (*pengalapan*). Windia, et al (19] recorded sixteen types of ritual ceremony that conducted at the farmer level, from *ngendagin/memungkah* (ceremony for the beginning of the land cultivation), *pengwiwit/ngurit* (ceremony held after sowing the seeds), to *mantenin*, the post-harvest ceremony conducted in the rice storage area *(lumbung padi*). Meanwhile, the ceremony at the *subak* level and between *subak* are *mendak toya* (ceremony to pick up the water to the water sources (dam, lake, spring)), and *nangkluk merana* (ceremony for pest control and prevention of plant diseases).

Subak temple has functional hierarchy, ranging from farmer level to the highest temple namely *Pura Ulun Danu*. Langsing and Therese A. De vet [20] reveal the hierarchy of the *subak* temple from the lowest to the highest that is *Pura Bedugul, Pura Ulun Carik, Pura Ulun Siwi, and two highest temples namely Pura Ulun Danu Beratan,* and *Pura Ulun Danu Batur*. Basically, all the temples and those ritual of *Subak* symbolize the expression of belief on God blessing that has been spread in the form of water, fertile land, and fruitful harvesting.

Besides that, there are also temples built on empty space of every water damp (*empelan*) and water division (*tembuku*) show meaning as control mechanism of God, so farmers are afraid to cheat the water flow because they believe in punishment from God (*karmaphala law)* and this religious notion can prevent internal conflict in *subak*. Langsing and Therese A. De Vet [20] through their research have proved that the *subak* temple network allows the farmers to apply the irrigation schedule, planting season, and *subak* disputes settlement. This network also can create an optimal balance between water distribution and plant pest control through synchronization or coordination in the fallow period. Synchronization of irrigation and ceremonies means fewer pests. Their discovery shows that the temples and rituals of *subak* also have a social fuction as a unifier of group integrity and ecological function as a controller of plant pests and diseases. Component of *pawongan* is implemented in the form of collective life through social interaction among subak members that are regulated in communal law called *awig-awig* and based on principles of *paras paros sarpanaya*, and *sagilik saguluk selunglung sebayantaka*.

Awig-awig or Balinese traditional law controls right, duty, and sanction that is legitimated in front of the God. Therefore, awig-*awig* is very much respected by all members of subak so the peace and social harmony can be achieved. Principle of *parasparos sarpanaya* means that we are part of others and others belong to us (meaning the same with helping one another, believe one another, and respect one another). Principle of s*agilik saguluk selunglung sebayantaka* means that good-bad, live-die are taken together (same boat and carried the same weight, cooperative, and working together). Subak has flexible organization structure that every decision is drawn and stated together in subak meeting periodically.

Cooperation becomes the main principle adopted in subak system, especially in operation and maintenance of the irrigation system. Joint operation and maintenance of the irrigation system means less work for the individual and joint water management means group pressure on free-riders. Subak as Balinese irrigation system which guarantees cooperative and institutional framework for farming households to maintain the collectively owns irrigation infrastructure. Besides that, the subak offers the adaptable structure which is necessary to fit the different needs of its members [20]. The subak is merely a supportive framework to allow farmers to manage rice production as smoothly as possible, assuring continuous access to irrigation water, minimizing free-riding through joint responsibilities in management and operation, and guaranteeing the protection of the crop by organizing ceremonies and setting a cultivation schedule [18].

The applying the component of *palemahan* basically is associated with controlling the use of water, rice field and crops sustainably. Technical water irrigation allocation is based on principle of fairness with *tektek* system. This system is about the right measure to water which is allocated to every member of subak generally based on size of rice field cultivated.by the farmers. The wider the rice field the more right to water the farmer get. This is implicated to the bigger obligation that must be taken by the member of *subak*, like the obligation of *ayahan* (energy), *sarin tahun* (annual fare), and *pepesuan* (other fine). In distributing and allocating the irrigation water, subak applies a system of *pelampias*, that is by giving more water to those whose rice field is in downstream, a system of water loan agreement, and water or crops rotation system which are controlled together by the farmers. This can be signified as form of being togetherness and cooperation.

Water distribution in division construction (*tembuku*) is made by using a system of *numbak*, that reflects fairness and ease in keeping it. The most apparent production technique in subak is the agreement of pattern and schedule with a system called *kertamasa* (planting all at once) therefore cycles of insects can be terminated or prevented. Controlling insects and dieses is conducted by spiritual approach which is called *nangluk merana* (expelling danger). System of *kertamasa* and *nangkluk merana* has function of environment conservation.

Based on the THK philosophy has proved that subak is considered as the unique irrigation system, most effective

local irrigation management in the world, as stabilizer of social and cultural life and democracy model, as regulator of ecosystem, as enabler of food security, and as application of good governance [12], [16], [17].

The analysis of character value through application of THK of *subak* mentioned above, can be summarized in the following table 1.

TABLE 1. CHARACTER VALUES IN LOCAL WISDOM OF *SUBAK*

THK	Application of Local Wisdom	Character Values
1	1. Water and land are creation of God, human is obliged to keep and respect them	Religious
	2. *Subak* Temples and ritual are belief expressions of gratitude on God creation.	Religious
	3. Temples function as control mechanism of God on behalf of honesty due to the belief of *karmaphala* law	Honesty
	4. Every empty land in every damp and water division construction used to build temples	Togetherness and peacefulness (love peace)
	5. Pattern and crop rotation schedule are agreed at the moment of ritual ceremony in subak temples witnessed by God	Integrity Unifier and care of environment conservation
2	1. The existence of *awig-awig*or subak law is applied directly and openly (rule in use)	Law-abiding, openness, discipline
	2. Principles of *paras paros sarpanaya sagilik saguluk selunglung sebayantaka*.	Tolerance (mutual respect and trust), social care (mutual help, mutual cooperation)
	3. Organization structure based on subak environment is autonomous so the decision and agreement are taken in *subak* meeting	Flexible, adaptive, democratic, and independent
	4. Obligations of member are considered on the base of equal right to water and position of members as *ayahan, sarin tahun, and pepesuan.*	Responsibility
2	1. The allocation of water irrigation is referred to a system called *tektek.*	Justice
	2. Water division construction (*tembuku*) is made by a *numbak* system.	Justice
	3. There is a system called *pelampias* that is by giving more water to those whose rice field is in downstream	togetherness, mutual help,
	4. Applying crop planting pattern or mechanism called *kertamasa.*	Environment conservation
	5. Applying the system of water loan agreement and rotation system	Mutual help to cover water scarcity (environment conservation) cooperative.
	6. Applying water flow controlling system (one-inlet/*pengalapan*) and removal system (one-outlet/*pengutangan)* of water on each block of farmer's land.	Mutual help to cover water scarcity (environment conservation)

Resource: Results of Meta-Analysis [Sriartha, 2017].

Based on the table 1 above, seventeen dominant character values contained in local wisdom of *subak* were recorded, including: religious, honest, togetherness (cooperative), love peace, unification environment care, social care, law-abiding, discipline, openness, flexible, adaptive, democratic, independent, justice, and responsible. Those character values are relevant to be developed as a model of character building in social studies learning in schools to Indonesian nation characters building.

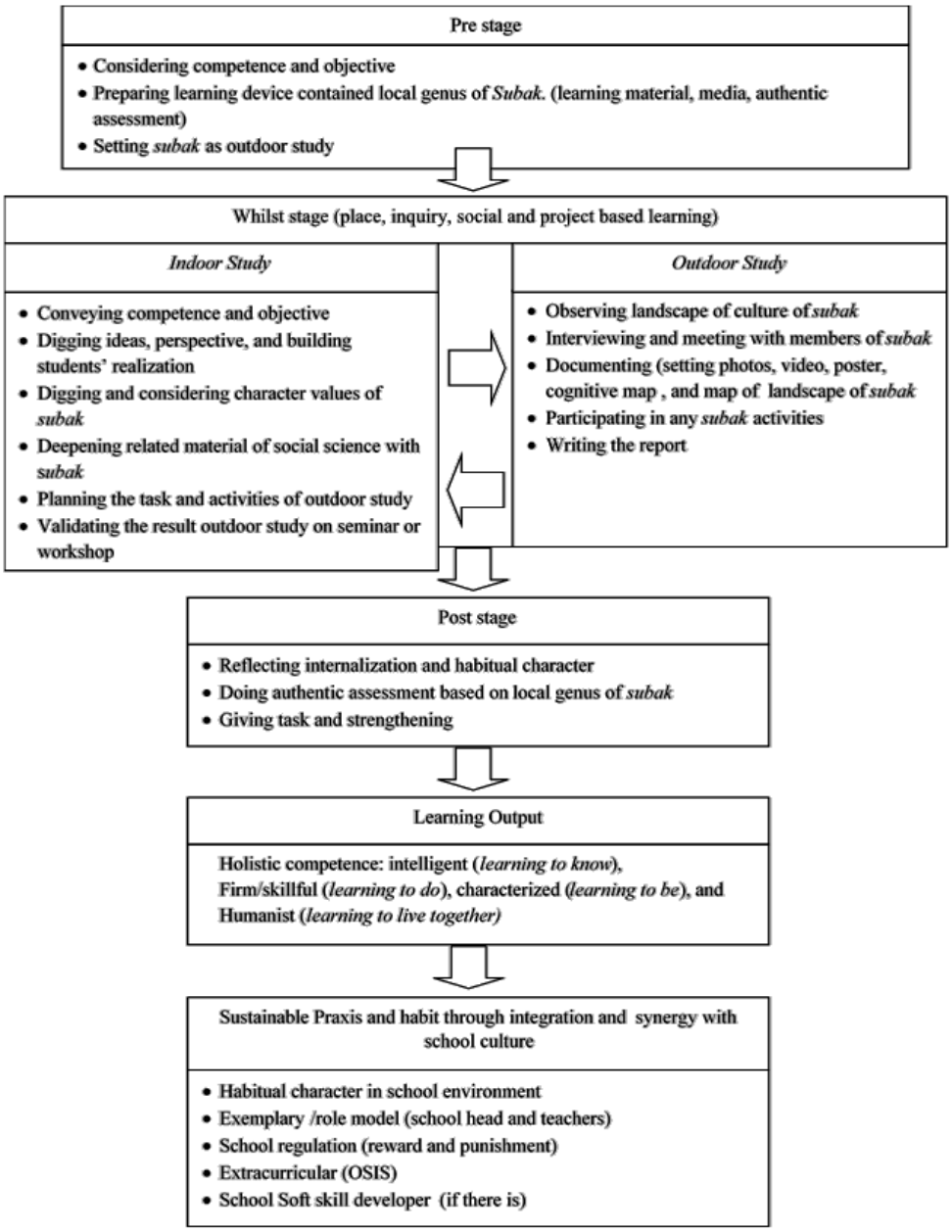

Fig. 1. Model of character building in social studies learning *(conceptual notion)*

IV. A MODEL OF CHARACTER BUILDING IN SOCIAL STUDIES LEARNING IN JUNIOR HIGH SCHOOLS

Character values which are identified in local wisdom of *subak* above, are basically nation character values. Those values are relevant with competence that are considered in curriculum of social studies for junior high schools (IPS SMP/MTs) 2013. The model of integrating character building into social studies learning which has been applied till now is still dominated by class based, less direct oriented to society area. This model is clearly contradictive to material area of social studies, that is society or community. The researcher who involved society as learning laboratory in social studies learning was still limited. Similar research among others conducted was in the form of an integrative echo- pedagogic learning model within community service and research based learning *(CRL)* by involving teacher candidate students, to re-contextualize the curriculum of basic education level by establishing the critical and creative mind, enjoyable and move forward to basic learning competence achievement: intelligent (*learning to know*), firm (*learning to do*), honest (*learning to be*), and care (*learning to live together)* [14]. Other similar research which was also was a cross culture point of view by using *subak* as model of ethnopedagogy. The study found that cross culture learning by implementing ideas of *subak* as model of ethnopedagogy was effective to be applied in establishing student's realization as young

generation in utilizing last culture heritage to build their future, so this model is considered significant for sustainable education [15]. Local wisdom of community (including *subak*) in social studies learning can be developed and integrated in components of curriculum, starting from objective of learning, material, process and assessment.

Flashing back from the findings of meta-analysis towards character values contained in local wisdom of *subak*, the research about a model social studies learning, competence and material scope in curriculum of social studies for level of junior high schools (SMP/MTs) 2013, the model of character building in social studies learning is called *integrative indoor-outdoor study*. The application of this learning model is planned into three stages, those are pre-stage, whilst stage and post stage. Those three stages of learning activities can be visualized in the following figure1.

The notion of above model has strength as it can reduce barrier between learning inside the class room and real life in society, between modern science (identified with western science) and local knowledge, and can develop students' competence holistically, that is student's basic competence considered intelligent (*learning to know*), firm/skillful (*learning to do*), characterized (*learning to be*), and humanist (*learning to live together).* In its implementation needless to say, there will be obstacles within the process, some of them can be the problem in controlling the time at the moment of *outdoor study*, problem in utilizing *subak* as place of *outdoor study* especially the schools that are in cities, far from the location of *subak*, and any other problems. Therefore, to recognize the effectivity of implementation and problems that appear, it is considered essential to validate through further research.

V. CONCLUSION

Developing local wisdom of *subak* as a model of character building in social studies learning in junior high schools has reciprocal benefit. On one side, it can increase social studies learning more meaningful, contextualized with real life, strengthen education as a process of culture to build nation character and establish students' competence holistically. On the other side, as the same time, this model can sustain the local wisdom of *subak* which is internationally acknowledged as protected culture heritage of Balinese ancestor. The finding of the study by using meta-analysis found 17 character values contained in local wisdom of *subak* that can be developed as a device character building. To develop those character values, it has been constructed a model of character building of local *subak* in social studies learning which is called *indoor-outdoor study*. The model needs validated and tested through further relevant research to recognize its effectivity and the problems of the implementation.

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The Effect of Javanese Language Philosophical Aspect on the Society's Communication Pattern in Indonesian Language

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***Abstract*- The pattern of communication in the Indonesian language in society is beginning to ignore the aspect of respect for the hearers. This paper aims to determine the effects of understanding the philosophical aspects of Java language to the pattern of society communication in the Indonesian language. Descriptive data obtained in this paper through observation and theoretical study of the language phenomenon and communication patterns in society. The analysis process is done theoretically and descriptively and through the process of language comparison. The results show that understanding the meaning of Javanese philosophy influenced the communication pattern of the people in using the Indonesian language in terms of words or phrases and words. The influence of the meaning of the philosophy comes in the form of changes in the word meaning and the mention pronouns in communicating.**

***Keywords*- aspects of Javanese philosophy; communication patterns**

I. INTRODUCTION

Language is a primary means of communication so that the language understanding is very significant in society life. In the daily life, language plays an important role in every life aspects. Trough a language, someone can convey his intention so that the information and message for society are received well. The information and message have to be delivered in the appropiate language, so the meaning can be understood by receiver easily because the difficulty in understanding some information and message can make different interpretation and understanding.

Based on that condition language can be a way to express someones ideas and minds. Through the clear language and expression, information and message can be comprehended and translated easily by the receivers. Moreover, someone's expression in giving information and message can cause different levels of understanding towards the receivers. This is so because someone expression in giving a message is influenced by his cultural social and society background. Consequently, the cultural condition of Indonesian language speakers highly affects the way they express information or message.

The diverse culture of the society influences the communication pattern in the society. That pattern can be found in the forms of idiom, language terms, or words in certain culture which are brought when communicating in Indonesian language. Sometimes, culture plays a dominant rule in someone's communication pattern in the society so that some unexpressed condition in Indonesian language have to be shown in the regional language expression. In this case, the writers will describe some idioms, terms, and words in Javanese language which are use in Indonesian language to express and deliver messages because they are considered to have philosopical values which can be understood commonly by the society.

Those Javanese words are used to express and ilustrate the various condition in the society recently. Those conditions are social, cultural, political, economic, law, education, and religion conditions. Those conditions sometimes can be more easily expressed in Javanese language because the meanings are easier to be understood. That language phenomenon happens because of the lack of languages media in Indonesian language which can describe the condition of Indonesian society and government. Therefore, the condition becomes one of the reasons why various terms and communication pattern in Indonesian language which are influenced by the Javanese language philosophy exist.

This paper is aimed at finding the influence of terms and words with Javanese language phylosopy on Indonesian language. The writers expect this paper can give understanding and knowledge for the writers and the readers on the Indonesian language development. Furthermore, this paper can give insight that a language will always develop dynamically to fit the speakers and societies condition and cultural background.

II. RESEARCH METHOD

The research method used in this paper was done through observation and analysis of phenomenon of language in

society, as well as theoretical study (literature study) on the origin of the Indonesian language. In the analysis process, the author uses theoretical references to the development of Indonesian language in communicating activities in the community derived from the Javanese language philosophy. The words absorbed from the Javanese language can be terms or phrases, stem words, and pronouns.

III. DISCUSSION

The philosophical aspect becomes an interesing topic to discuss when it is related to communication and culture. Arnett [1] states that communication philosophy in term of the language understanding as a communicative means of commmunication, has to give clear understanding both for the speakers and listeners. It means, language philosophy has to be completely understood as a verbal means of communication. The big numbers of Javanese words or terms containing the philosopical meaning which can be easily understood causes the language absorption process in Indonesian language can be received easily as well. Based on those language real function, the relationship between language and philosophy is closely related and even inseparable [2]. Philosophically, the review in this paper is an ontological review which discusses real scientific studies and analysis which the result can be measured and estimated [3].

1. The Philosophical Javanese Word which are Absorbed by Indonesian Language

a. Pronouns

Recently there are many Javanese word which are absorbed in Indonesian language with some reasons. Those process happen because of the lack of Indonesian vocabulary to state objects or condition. Otherwise, in Javanese language there are many words which can be used to state an object so that Indonesian language speakers with Javanese cultural background can easily use those word. Based on that process there are many Javanese words which are absorbed into Indonesian language to meet the need of vocabulary completeness. According to Maneechukate [4] one of the mean intentions of word absorbtion is to complete a word and its use. That process is conducted through word borrowing coming some factors such as the influence of trade, religion, culture, and technology development.

Based on development, Indonesian language consists of various absorbed words from other languages. In this case Javanese language is one of the sources. However, the absorption process not only caused by the need of the vocabulary but also because of the phylosopical meaning factor in Javanese language. The Javanese words meaning philosophy is influenced by the language manners (*unggah-ungguhing basa*).

According to Rahmawati [5], the Javanese can use Javanese language in their daily life because they often use the language in their daily life. Their parents accustom them to use Javanese language for communication since they are young. Then those repetitive actions sooner or later become a habit.

The awareness in using Javanese language affects someone to integrate cultural aspects in using the language. Javanese culture which highly honours each other causes language expressions produce various word class with changing meanings. As we know that the changing of words meaning in Indonesian language can be meaning expansion, constriction, ameliorative, and pejorative. In this case, the changing word meanings influenced by Javanese culture with phylosopical meaning are ameliorative and pejorative. Ameliorative meaning is the changing of the words meaning to be better from the previous ones. For example the word ‘perempuan’ becomes ‘wanita’ and ‘laki-laki’ becomes ‘pria’. Pejorative meaning is the changing of the words meaning to be worse or more rude from the previous ones. For example the word ‘istri’ becomes ‘bini’, ‘hamil’ becomes ‘bunting’, and ‘meninggal’ becomes ‘mati’.

Beside the changing of the word meaning, Javanese culture influences the subject and object pronouns. The examples are as follows :

- *aku, saya* (I)
- *kamu, anda,*(you) *saudara, bapak/ibu* (Sir/ Ma’am), *dia/ia, beliau* (he / she)

The differences in terms of pronouns and meaning change are intended to honour the addressee so that the communication process seems to be more polite or rude depends on the addressee’s condition. From that explanation, a communication process must be based on the communication ethics to keep the freedom in responsibly expressing ideas.

Since there are various concepts in communicating, according to Robillard [6] communication and information become closely interrelated. Communication concept does not only refer to the speaker’s and listener’s conceptual meaning but also in a social scope, philosophical theory on reality, and the social life righteousness.

b. Stem Words

There are some Indonesian stem words which come from Javanese language absorption.

For example:

1. *gampang* (Javanese) = mudah (Indonesian) = easy
   sentence : Mendidik anak bukan perkara *gampang* bagi orang tua zaman sekarang.
   It’s not easy for the parents to bring up their children nowadays.

2. *rampung* (J) = selesai (I) = finish
   sentence : Gol dari pemain pengganti tim tamu sebelum pertandingan *rampung* membuyarkan kemenangan tim tuan rumah.
   The goal stroke by the guest substitute player before the match fnished destroy the host team victory.

3. *ngomong* (J) = bicara (I) = speak
   sentence : Jika tak memiliki keberanian *ngomong* di depan khalayak, akan selamanya grogi karena tak pernah mencoba
   If you don't dare to speak in public, you will be nervous forever because you have never tried.

4. *joget* (J) = menari (I) = dance
   sentence : Penonton ikut bernyanyi dan *joget* diiringi lagu dangdut yang dinyanyikan penyanyi populer.
   The audiences sing and dance accompanied by dangdut music sung by a popular singer.

5. doyan (J) = gemar, suka (I) = like
   sentence : Banyak mahasiswa yang *doyan* ke kampus tanpa mengenakan helm, padahal hal ini berbahaya.
   There are many students who like to go to the college without wearing the helmets eventhough it is dangerous.

Javanese language is a regional language which develops particularly in Java island. This language supports the existence as well as enriches Indonesian language. This is shown in the existence of Javanese word forms which are absorbed by Indonesian language. Muhadjir [7] states that Javanese language becomes the source to fulfill the less formal communication requirements such as journalistics language development and daily small talks as mentioned before.

2. Javanese Terms/ Idioms which are Absorbed by Indonesian Language

Some Indonesian terms to describe certain conditions are absorbed from Javanese language. This is because Javanese language possesses abundant phylosophical meanings and values. In Javanese language, those terms are used as a means to express ideas or deliver messages to be received and understood easily by the receivers. Hariwijaya [8] divides those terms into four categories, those are a) *sesanti kabudayan jawa,* b) *pasemon dan tradisi*, c) *sanepa mawa tengara*, dan d) *piwulang kautaman*. The categories can be explained as follows:

a. Sesanti Kabudayan Jawa

Sesanti is a slogan used to encourage, motivate, increase self-confidence, build unconscious power, and strengthen a group unity and solidarity. As a slogan, *sesanti* sentence is energize, compact and meaningful with beautiful and memorable language. In this society modern life, *sesanti* as well as slogan or motto legally becomes slogans of many regions in Indonesia. It is also used as Indonesian national slogan. The followings are some *sesanti* which are widely known in Indonesian language,

1. *Bhinneka tunggal ika,* means unity in diversity.
2. *Tut wuri handayani*, means a leader who gives support from behind.
3. *Ing ngarsa sung tuladha*, means a leader who gives examples in front of his people.
4. *Ing madya mangun karsa*, means a leader motivates their people.

Those *sesanti* are used by the nation as slogans for their constitutional life.

b. Pasemon* and *Tradisi

Pasemon is a polite satire addressed to the people having high positions in the country about the governance condition in Javanese society. That term appears because of the Javanese social regulation which hierarchically produces word classes. In Javanese, word classes are called *unggah-ungguhing basa* or the manners in using the language. *Pasemon* is used to give opinions or criticize the seniors with a polite language since a carelessness in stating social criticisms can endanger someone's life.

There are some *pasemon* used in Indonesian language as follows,

1. *cicak versus buaya*, artinya petugas atau pejabat kelas bawah yang akan menangkap pejabat tinggi yang bermasalah (house lizard vs crocodile means the low level officer who will arrest guilty high positioned people)
2. *tikus kantor*, artinya kritik atau sebutan untuk pejabat pemerintah yang melakukan korupsi atau pencurian uang negara berkedok petugas negara. (office mouse means corrupt officers)

Pasemon is frequently used as a statement to express citizens' criticisms towards the government.

c. *Sanepa Mawa Tengara*

Sanepa is a Javanese polite satire to criticize others without offending those people since they are forced to understand the meaning of the satire themselves. In Indonesian language, it is called *'ironi'.* There are some *sanepa* used in Indonesian language as follows,

1. *Pait madu eseme*, artinya senyumnya sepahit madu (his smile as bitter as honey)
2. *Landep dhengkul pikirane*, artinya pikirannya lebih tajam dari lutut (his mind is sharper than knee)

Sanepa is frequently used as a satire for other people in a certain condition which cannot be expressed in a complete language.

d. Piwulang Kautaman

Piwulang is an advise given to someone in a good matter. It is used to teach people to do good things each other. It is an effort to sharpen someone's ability to always behave properly to other because humans naturally have the ability to decide which one is right or wrong, good or bad. There are some *piwulang kautaman* used in Indonesian language as follows,

1. *Adi luhung*, means the noble value

2. *Aji mumpung*, ilmu mumpung means abusing opportunities to personal gain
3. *Alon-alon waton klakon*, means slowly executed
4. *Bobot, bibit, bebet*, means intelligence, ancestry, and wealth
5. *Darma bakti*, means dedication
6. *Digdaya tanpa aji*, means powerful without weapons
7. *Guru swadaya*, means autodidact
8. *Kadalu warsa*, means expired
9. *Mawas diri*, means introspection
10. *Ngelmu kasampurnan*, means the science that makes a person's life perfect
11. *Salah kaprah*, means wrong expressions or conditions but already understood together
12. *Sakti mandraguna*, means powerful person
13. *Sim salabim*, means magic spell
14. *Tumpeng sari*, means planting in one field, (Hariwijaya, 2013).

Piwulang kautaman is often used to give information or messages as an advise to teach good behavior in the society life.

IV. CONCLUSIONS

This paper explains that someone's understanding on Javanese language philosopical meanings affects the society communication pattern in the forms of terms, stem words, and pronouns in Indonesian language. Based on that result, it is expected to enhance the understanding of the words meanings in communication to increase someone's self-confidence in communicating with other people both in the same and higher positions.

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SIsKA: Mobile Based Academic Progress Information System

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***Abstract*— The academic process of the graduate program in Universitas Pendidikan Ganesha (Undiksha) generally consists of lectures, proposal seminar, pre-thesis and thesis examination. Management process which monitors academic progress is required because every academic process requires conditions to be fulfilled by the students. The research focuses on making a mobile based academic information system named Academic Progress Information System (SIsKA). SIsKA is designed by using Data Flow Diagrams (DFD) and Entity Relationship Diagram (ERD) with six tables in the database. Initially, this system requires input which is in the form of data requirement for the thesis, then the head of the administrator, can start designing the schedule from each stages. The evaluation of SIsKA mobile applications was carried out by allowing 30 Computer Science Students to use it. Feedbacks were obtained from user using a simple questionnaire. The overall rating for the system is 4.22. Overall evaluation of the product lies between good and very good. In the future, SIsKA will continue to develop to accommodate submission deadline mechanism and more advanced scheduling requirement, like parallel session.**

Keywords*— *Academic Progress; Information System; mobile; web

I. INTRODUCTION

Computer Science is relatively new graduate study program at Universitas Pendidikan Ganesha (Undiksha). It normally takes four years for students to complete the study. Like other programs in the university, students have to write a thesis to finish their study. There are three steps in writing the thesis namely: 1) submitting the thesis proposal – after the thesis supervisors have been assigned, the students register their proposals to the head of the study program for a proposal seminar; 2) pre-thesis – after doing the research, students register and submit their research results for a pre-thesis examination; and 3) thesis – this is the last step in thesis examination.

To do the above task more easily and more efficiently, the use of technology will definitely help. One of the functions of information and technology (IT), especially networking technology, is to support our daily activities and to solve our daily problems. The development of internet, which has also been installed around the campus, will be very helpful if it is used to support the process of schedule arrangement of proposal seminar, pre-thesis and thesis examination.

Therefore, this research aims at designing and developing a prototype of the Information System (SIsKA) which will be able to help all the tasks that have been mentioned above without losing any essential values. SIsKA is abbreviation in Indonesian, stands for Sistem Informasi Kemajuan Akademik (Academic Progress Information System).

The research problems proposed in this research are:

a. How is the Information System for Academic Progress designed in the Computer Science Graduate Program of Undiksha?
b. How is the Information System for Academic Progress implemented in arranging the schedules for proposal seminar, pre-thesis and thesis examination in the Computer Science Graduate Program of Undiksha?

The purposes of this research are:

a. To design the Information System for Academic Progress in the Computer Science Graduate Program of Undiksha.
b. To implement the Information System for Academic Progress in arranging the schedules for proposal seminar, pre-thesis and thesis examination in the Computer Science Graduate Program of Undiksha.

II. BASIC THEORY

A. Information System

Information System have many definitions from different authors.

1. The information system is what emerges from the usage that is made of the IT delivery system by users (whose strengths are that they are human beings, not machines) [10].
2. An automated or manual collection of people, machines, and/or methods to gather, process, transmit, and disseminate data. Information systems are used to acquire, store, manipulate, manage, display, transmit, or receive data. It includes both hardware and software [5].
3. Interrelated components working together to collect, process, store, and disseminate information to support decision making, coordination, control, analysis, and visualization in an organization [7]

Carvalho (2000) identifies four types of objects that can be viewed as information systems:

a. Organizations (autonomous systems) whose business (purpose) is to provide information to their clients.
b. A sub-system that exists in any system that is capable of governing itself (autonomous system). The information system assures the communication between the managerial and operational sub-systems of an organization. When this communication is asynchronous, a memory to store the messages is necessary.
c. Any combination of active objects (processors) that deal only with symbolic objects (information) and whose agents are computers or computer-based devices a computer-based system.
d. Any combination of active objects (processors) that deal only with symbolic objects (information).

B. *Unified Modelling Language*

The UML is an international industry standard graphical notation for describing software analysis and designs. When a standardized notation is used, there is little room for misinterpretation and ambiguity. Therefore, standardization provides for efficient communication (a.k.a. "a picture is worth a thousand words") and leads to fewer errors caused by misunderstanding. UML was originally motivated by the desire to standardize the disparate notational systems and approaches to software design developed by Grady Booch, Ivar Jacobson and James Rumbaugh at Rational Software in 1994–1995, with further development led by them through 1996 [1]. In 1997 UML was adopted as a standard by the Object Management Group (OMG), and has been managed by this organization ever since. In 2005 UML was also published by the International Organization for Standardization (ISO) as an approved ISO standard. Since then it has been periodically revised to cover the latest revision of UML.

C. Use Case Diagram

Use case diagrams are used during requirements elicitation and analysis as a graphical means of representing the functional requirements of the system. Use cases are developed during requirements elicitation and are further refined and corrected as they are reviewed (by stakeholders) during analysis. Use cases are also very helpful for writing acceptance test cases. The test planner can extract scenarios from the use cases for test cases. Note: The use case diagram is accompanied by a textual use case flow of events. The flow of events is not explained in this document. A use case, a concept invented by Ivar Jocbson [4], is a sequence of transactions performed by a system that yields an outwardly visible, measurable result of value for a particular actor. A use case typically represents a major piece of functionality that is complete from beginning to end [2].

III. RELATED WORK

In practice, the process of designing the Information System for Academic Progress is done through discussion, questions and answers (QA), feedback consideration, and some other activities. As for now, the process of schedule arrangement is still done manually using Microsoft Excel by the head of the department. The obstacle faced in doing this manually is that it takes long time to arrange the schedules for proposal seminar, pre-thesis and thesis examination.

To overcome this problem, several universities in Indonesia have developed some kinds of Information System for Lecture Scheduling, from the Information System for Lecture Scheduling using Expert Mode System to the application for thesis scheduling [8].

Suranto & Ramdani (2015) developed a management information system that can improve the efficiency and flexibility of procedures and thesis services in Master of Informatics Engineering. The developed system has functionality that is able to assist students, supervisors, and staff of Master of Information Engineering UII in conducting activities related to thesis procedures and services. Thesis Management Information System has been successfully developed and tested to prospective users in the environment of Master of Informatics Engineering FTI UII. The developed system can help improve the efficiency of the business process of thesis services ranging from proposal submission, guidance, to thesis examination. The system is also useful for the manager of Master of Informatics Engineering in managing data related to student thesis, especially for recap and reporting purposes. But the information system built is still a web application. Mobile application needs to be developed from this system so as to increase the flexibility of system usage, especially for features for supervisors.

Kulawansa & Firdhous (2017) developed application for providing trusted and timely information to tourists in an efficient and effective manner. Both mobile and web applications have been developed as proofs of concept applications. Most of the existing tourist guide applications provide only a single feature like booking hotels, getting the services of tourist guides, finding restaurants or taxi services. There are few applications that provide more than one feature within a single application. But the services provided are not clearly categorized making them difficult to use. As future work, accessing of remote API for fetching data from ongoing applications and accessing of heterogeneous types of data from different applications need to be implemented. Further, combining of different types of organizations into a one platform requires to be researched. Incorporating services with new and emerging technologies through hybrid applications is also suggested to be carried out as further work.

IV. RESEARCH METHOD

A. System Requirements

1. The process that can be done by the Information System for Academic Progress (SIsKA) is organizing the data of the proposal and thesis of the Computer Science students of Undiksha.
2. The scheduling program on the Information System for Academic Progress can only be done if all the necessary data are complete.

B. Analysis & Design

The following figures will explain in detail the design of the system supporting the decision for the best official with the relationship with their outside entity using UML. UML used is Use Case Diagram and Activity Diagram.

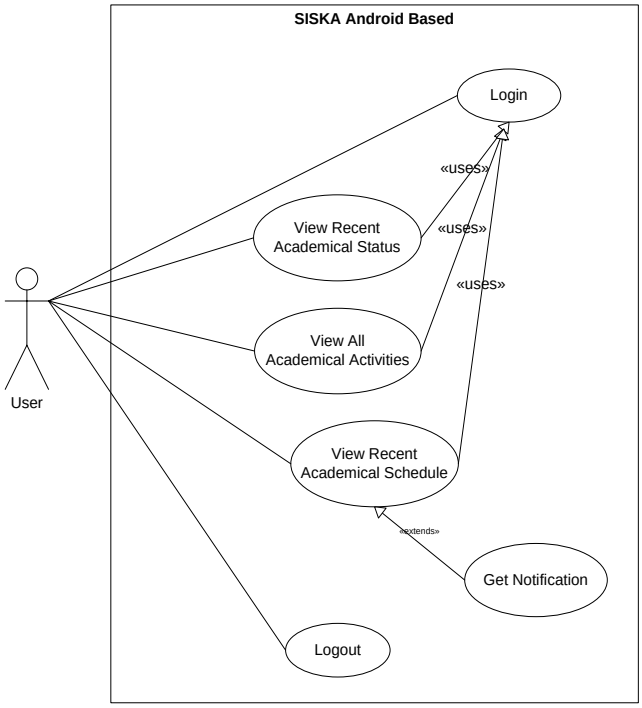

Figure 1. Use Case Diagram of SIsKA

In addition to use case diagram, this research uses Activity Diagram. Activity diagrams are used during the design phase of complex methods. Alternately, the activity diagram can also be used during analysis to break down the complex flow of a use case. Through an activity diagram, the designer/analyst specifies the essential sequencing rules the method or use case must follow.

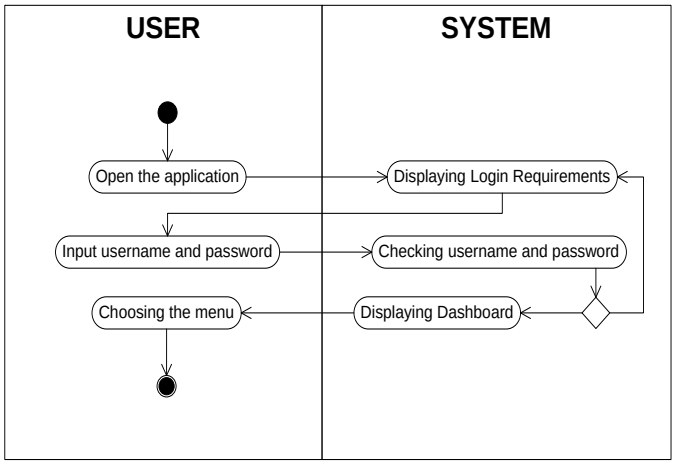

Figure 2. Activity Diagram for Login Process

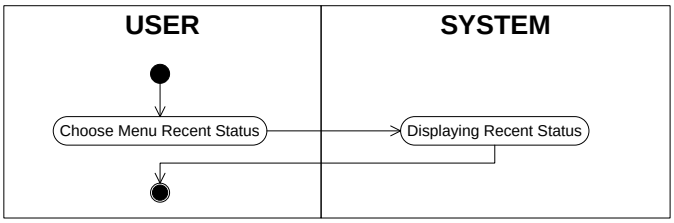

Figure 3. Activity Diagram for View Recent Academical Status

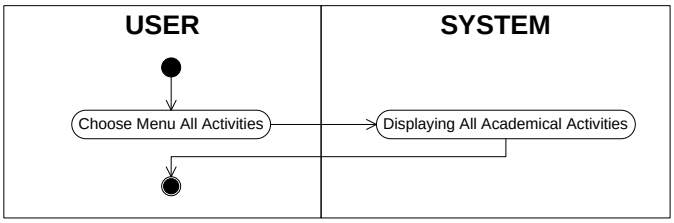

Figure 4. Activity Diagram for View All Academical Status

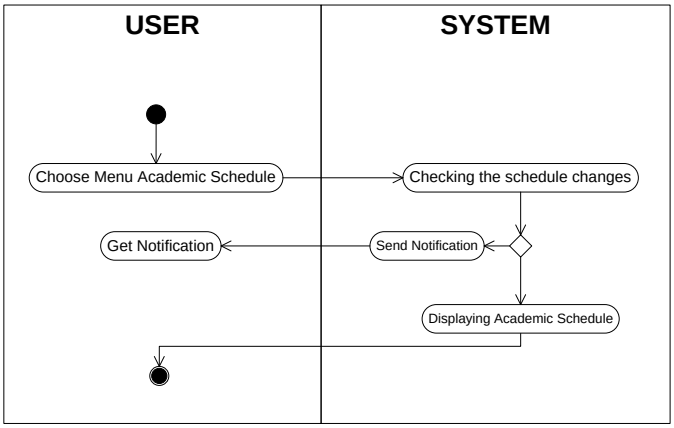

Figure 5. Activity Diagram for View Recent Academical Schedule

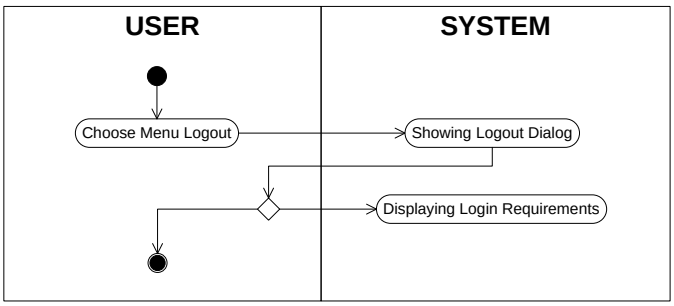

Figure 6. Activity Diagram for Logout Process

Designing the data structure of the software is a step of defining functional requirements in the process of developing a system. The functional requirements are the field content or structure for the identified fields in developing the Information System for Academic Progress (SIsKA).

C. Architecture of The System

SIsKA Web application has been designed with the objective of enabling access for two types of end users. They are namely clients (students) and administrator (head of administrator). Hence it includes interfaces for both types of end users. The web application has been developed using technologies such as PHP languages along with html5, css3, JavaScript, jQuery. The mobile application has been developed using Android studio along with Java and XML.

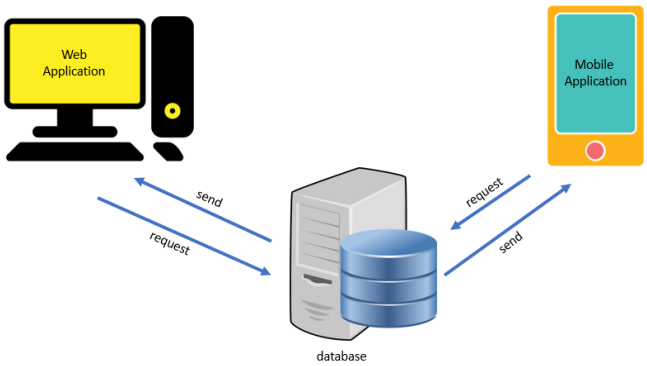

Figure 7. Architecture of The System

V. IMPLEMENTATION

Implementation of SIsKA was computed on Intel Core™ i5-6220U CPU with 2 cores 4 threads @2,8GHz (3 Mb cache), 4GB RAM, and Windows 10 Pro 64-bit Operating System. The program which used to build mobile based SIsKA is Android Studio 2.2.3.

SIsKA mobile application emphasizes more on notification when the students have been schedule to a proposal seminar, pre-thesis or thesis examination. The following figures each show SIsKA mobile-based.

1. The Mobile Form of Login page

Figure 8. The Mobile Form of Login Page

2. The Mobile Form of Menu page

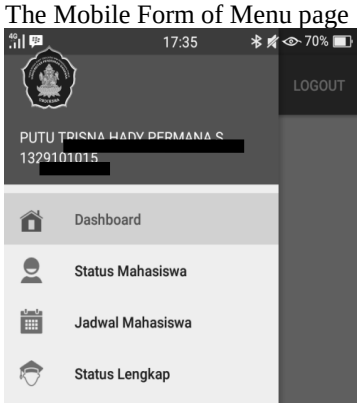

Figure 9. The Mobile Form of Menu page

The application starts with system shows the login page. After the user enters the username and password, the system will check the username and password in the database. If the login data entered is valid, then SIsKA will show the dashboard page. There will be 4 main menus on SIsKA mobile. If the user selects the student status menu, then the system will show the current status of the student. If the user chooses the student schedule, the system first checks whether the student has got a schedule or is waiting for confirmation. When there is a student schedule change, the system will send a notification. If the user selects full academic status, the system will show the student status from the proposal stage to the thesis stage. If the user selects logout, the system shows a logout dialog. If selecting 'yes' then the application will be closed otherwise if selecting 'no' the system will show the dashboard page.

VI. TESTING

Once the implementation of the application was completed, the evaluation of mobile applications was carried out by allowing Computer Science Students to use it. Feedbacks were obtained from user using a simple questionnaire. The objective of the questionnaire was to rate each aspect of the system and get a clear idea about the state of the application and possible improvements. The evaluation of application by the prospective users is important component of any application development process. This provides a suitable and effective measure for evaluating the success of the research work. The data gathered from feedback forms were analyzed for determining whether the system has achieved the objectives successfully or not in terms of fulfilling user requirements. The questionnaire was circulated among 30 users. The questionnaire was developed based on the functionalities provided in the system and the improvements expected by the users. The different aspects of the application evaluated are:

1) User friendliness of the web/mobile applications
2) Concept of the web/mobile applications
3) Responding speed of the web/mobile applications
4) User interactivity of the modules
5) Accuracy level of the results
6) Business model for the software
7) Usefulness of the application for university

Table 2 presents the summary of the responses received along with the scores computed and ratings for each aspect.

Item \ Rating	Very Good (5)	Good (4)	Moderate (3)	Poor (2)	Very Poor (1)	Number of Responses	Average Rating
User friendliness of the mobile applications	10	15	5	0	0	30	4.17
Concept of the mobile applications	11	14	5	0	0	30	4.20
Response time of the mobile applications	13	12	2	3	0	30	4.17
User interactivity of the modules	10	15	5	0	0	30	4.17
Accuracy level of the results	11	14	6	0	0	30	4.30
Business model for the software	7	15	8	0	0	30	3.97
Usefulness of the application for University	6	16	8	0	0	30	3.93

Figure 10 shows the evaluation results in user friendly graphical format. The graph shows the average rating given by 41 users for each aspect of the applications. It can be seen that the rating for all the aspects lie between 4 and 5, where 4 stands for good and 5 stands for very good respectively. The overall rating for the system is 4.22. Hence, the overall rating for the product lie between good and very good.

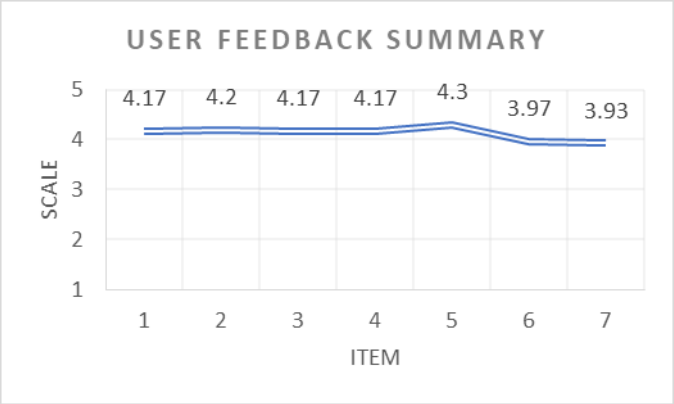

Figure 10. Graphical Representation of Feedback Analysis

SIsKA mobile evaluation results can run on all Android devices tested in accordance with the minimum requirements of the application that has been set. Tests conducted using Android devices with brands such as Samsung, Sony Xperia, and Advan with different specifications. All features found in SIsKA application can be run and no errors occur.

VII. CONCLUSION AND FUTURE WORK

Based on the analysis done on the design and implementation of the software, it can be concluded that:

1. The Information System for Academic Progress (SIsKA) in the Computer Science Study Program of Undiksha was successfully implemented in mobile-based (Android) software and show notification.
2. SIsKA helps the head of administrator manage students' academic progress, from pre-thesis examination to thesis examination more easily and more efficiently
3. The result of the Blackbox testing shows that all the testing items produce outputs which are appropriate with what are desired.

VIII. SUGGESTIONS

SIsKA still has some limitations. There are several functionalities that can be accommodate in a future, i.e. submission deadline mechanism and more advanced scheduling requirement, like parallel session.

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The Quality of Chemistry Learning Process Viewed from Learning Outcome Indicators and Process of Teaching

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***Abstract*—This research aims at describing and explaining the quality of chemistry learning of senior high school students. This research was a qualitative study focusing on analysing the formulation of learning outcome indicators and the learning process organized by teachers as well as factors influencing the learning process. Three chemistry teachers teaching at grade ten, eleven, and twelve from three different schools located at the district of Buleleng, the Province of Bali, were involved in this study. Document analysis and interview technique were used to collect information. The result of this study revealed that: 1) The formulation of learning outcome indicators involved lower order thinking and higher order thinking categories. However, most formulations were fallen into low order thinking category. 2) The learning process used various approaches, methods, and strategies. 3) The factors influencing the teaching learning process came from three resources, namely: the students, the teachers, and the schools.**

Keywords*—*chemistry learning process, learning outcome indicators, teaching process.

I. INTRODUCTION

Teaching and learning processes are seen as "coin sides." On one side of the coin, there is a teaching process and on the other side there is a learning process. The learning process of students can be occurred on the absence or presence of teachers. On the absence of teachers, the learning process is initiated and directed individually known as self-directed learning [1][2]. On the presence of teachers, the learning process is seen as the effect of teaching strategy used by teachers. This means that all learning activities conducted by the students are based on teachers' instruction or guide. The latest definition is referred to as the teaching learning process or learning process only, i.e. the process of learning of students conducted under teachers' instruction [3].

On the learning process of students, teachers play an importance role. They will play a role as learning resources, as a learning manager, as a learning facilitator, as a learning evaluator or assessor, as well as a role model of behaviour [4]. As the learning resources, it can be mentioned that teacher is the cheapest learning resources who can be accessed interactively in or out of the classroom. Teacher's explanation is still important, although it should be seen one skill in a broad repertoire of teaching skills [5]. In this case, teachers are required to master the content of learning materials. As the manager of classroom learning, teachers are responsible to manage the learning process. In this case, teachers should plan, do, and check the learning process. They develop learning programs or lesson plans, conduct learning process, and assess the students learning outcomes. As the facilitator of classroom learning, teachers are responsible to help students to solve any problems they have during the learning process. In this case, the teacher should have good interpersonal skill, such as friendly, charming, and patient to create joyful leaning [6]. As the evaluator of learning, teachers are responsible to make educational decision based on the result of learning obtained by students. In this case, teachers should develop instrument for learning assessment and assess as well as evaluate students learning outcomes [7]. As the role model of behaviour, teachers are expected to demonstrate good personal and social behaviours in terms of respect, morality, religious and social values that can be taken by the students for their personal development model [8][9].

One way to improve the quality of learning process can be done through curriculum development. The changing of curriculum, from KTSP (*Kurikulum Tingkat Satuan Pendidikan*) to 2013 Curriculum is one of education innovation done by the government of Indonesia. The 2013 Curriculum is already implemented about four years' step by step at schools. At present, some schools are still operating two curriculums (the KTSP and the 2013 Curriculum). These two curriculums have slightly different structures. The differences are significantly existed in the formulation of competency of students and the approach of learning. The competency of students is described in terms of core competency (*Kompetensi Inti*) and basic competency (*Kompetensi Dasar*). The learning approach focuses on the use of scientific approach with five steps learning strategy, namely: observing, questioning, collecting information,

associating, and communicating. This learning strategy is introduced as 5M learning strategy. The 5M is defined as observing *(Mengamati*), questioning (*Menanya*), collecting data (*Mengumpulkan data*), associating (*Mengasosiasi*), and communicating (*Mengomunikasikan*) [10]. In addition, teachers are also recommended to use other innovative learning strategies in teaching, such as problem based learning (PBL), discovery learning, and project based learning. It is believed that these learning strategies facilitate students to learn, especially in learning science subjects, such as chemistry, in scientific ways utilizing the so called scientific methods. The development of scientific attitudes is also promoted in terms of religious and social values practised in daily life [7][9].

The learning competency is classified into three categories, namely: religious and social competencies, knowledge competency, and skill competency. Although the curriculum sets out three areas of learning outcomes, it seems that the majority concern on teacher in teaching is focused on the development of students' knowledge of the subject. In addition, it is also found that the formulation of learning outcome indicators (LOI) falls into low level of thinking. This indicates that the quality of learning is still low [11].

There are several factors that known to be able to affect the implementation of curriculum at schools. In general, those factors can be viewed from teacher side as well as the school side. Since the curriculum has some new ideas, the problem can be raised from the teacher's understanding about the curriculum and facilities provided by the schools. Some teachers face difficulties to implement the curriculum. Although the curriculum is changed, the way of teachers teach does not change very much and still using the so called conventional teaching strategy (the direct instruction model of teaching) [4]. Some schools fail to provide facilities for learning. Therefore, learning process is conducted slightly different from the curriculum requirement [12][13]. These phenomena need to be investigated intensively to find out the real situation of chemistry classroom learning.

The content of subject matters in 2013 Curriculum is not structured based on the topic of learning materials, but it is presented integratedly in the form of basic competency. For examples, the basic competencies of senior high schools (SMA) chemistry for grade ten are as follows. The basic competency for knowledge development (code 3.2) states "comparing ionic bonds, covalent bonds, coordination covalent bonds, and metal bonds as well as their correlation with the physical properties of compounds." The basic competency for skill development (code 4.2) states "presenting group discussion results about elements stability, Lewis structure, ionic and covalent bonds, coordination covalent bonds, polar and nonpolar compounds, metal bonds, and the properties of compounds." [14]. The topics of learning materials should be derived from the description of competency. For the above competencies, the topic of learning materials is chemical bonding.

Teachers are expected to formulate specific learning outcome for each topic in the form of indicators. These indicators are used as guidelines to formulate learning objectives, to conduct learning process, and to formulate instrument for assessing learning outcome. Therefore, the quality of learning is determined by the level of LOI formulated by teachers. If teachers formulate appropriate indicators, then the learning outcome will have high quality and vice versa, if teachers formulate inappropriate indicators, then the result of learning will fall into low quality of learning. Several teachers find difficulties to formulate indicators, especially for attitude aspect, in connection to the topic [7]. Teachers usually formulate general indicators for expected religious and social values. The indicator is not apparently connected to the topics.

Chemistry learning at SMA focuses on the learning of the structure and properties of matters, the change of matters, the energy involved in the change of matter, and the important of chemistry in daily life. These learning materials can be learnt theoretically and practically. Practice, in this case, learning through experiment is hardly required because chemistry is not only learning a macroscopic phenomenon of matter, but also more importantly learning a microscopic phenomenon of matter as well as symbolics of phenomena. The most important aspect of learning that can be used to predict the quality of learning is the formulation of LOI. Therefore, it is important to know the kinds of LOI formulation done by teachers.

Theoretically, the LOI is formulated based on the taxonomy of learning. The level of LOI is classified into two, namely: low order thinking (LOT) and higher order thinking (HOT) [15]. This category is also known as critical thinking skill. Based on the Bloom's Taxonomy, the LOT includes remembering, understanding, applying, and the HOT includes analysing, evaluating, and creating [11, 16, 17]. In the formulation of *Trikaya* Taxonomy, Subagia dan Wiratma [9] described the HOT including thinking, speaking, and acting levels. The LOT is characterised by an instruction words, such as identify, explain, mention, use, whereas the HOT is characterised by instruction words, such as compare, contrast, justify, make.

Based on the description above, the research questions answered in this study are as follows. What kinds of LOI formulated by teachers for chemistry learning at SMA? What are the learning processes used by the teachers in teaching chemistry at SMA? What are the factors influencing the learning process of chemistry at SMA? The answers of these questions are important for improving the quality of learning process of chemistry at SMA.

II. METHODS

This research was a qualitative study aimed at describing and explaining systematically the formulation of LOI made by teachers, the strategy of learning used in the classroom or

at laboratory, and the factors influencing the teaching learning process of chemistry. This research was conducted in the district of Buleleng, the Province of Bali. Three chemistry teachers teaching in grade ten, eleven, and twelve from three different schools were involved in this research. Document analysis and interview technique were used to collect data and an interpretive analysis was used to develop the meaning of the findings [18][19]. Twelve documents of lesson plans were analysed intensively to find out topics of chemistry learning, learning competencies, LOI, and learning strategies used by the teachers. Five questions were focused on interview, namely: the question of learning approach, learning methods, learning strategies, problems faced in learning, and factors influencing learning.

The result of this study is presented in terms of the description of the LOI formulation made by teachers, the learning strategies used by the teachers, and the factors influencing the learning process of chemistry. Conclusion is formulated based on interpretive analysis in which the meaning of event or phenomena is constructed step by step through data reduction, data display, and triangulations of methods as well as resources [20].

III. RESULTS AND DISCUSSION

3.1 Learning Outcome Indicators

This study involved twelve lesson plans used by three chemistry teachers for teaching chemistry at grade ten, eleven, and twelve in three different schools. The formulation of LOI by the teacher is collected from those lesson plans mentioned above. The LOI is classified into two, namely: LOT and HOT categories. The category of learning outcome indicators in relation to the basic competences was presented in Table 1.

TABLE 1. BASIC COMPETENCIES AND INDICATORS

Grades	Basic Competencies	LOI Categories
X	Understanding scientific methods, the principle of chemistry, safety work at laboratory, and the importance of chemistry in daily life	Explain the definition of chemistry (LOT) Explain the characteristics of chemistry (LOT) Explain scientific methods (LOT)
	Comparing ionic bonds, covalent bonds, coordination covalent bonds, and metal bonds as well as their correlation with the properties of matters	Explain the stability of VIII group elements (LOT) Explain the trend of stability of element excluding VIII group (LOT) Explain the process of ionic bond formulation (LOT) Explaining the properties forr ionic compounds (LOT)
	Applying relative molecular mass concepts, reaction equation, fundamental law of chemistry, and mole concepts in stoichiometry	Determine empirical and molecular formula (HOT) Determine water molecules in hydrate compounds (HOT)
	Applying relative molecular mass concepts, reaction equation, fundamental law of chemistry, and mole concepts in stoichiometry	Design an experiment to prove Lavoisier Law (HOT) Conduct experiment to prove Lavoisier Law (HOT) Prove the application of low of constant proportion through calculation (HOT)
XI	Predicting the formation of precipitate from reaction based on solubility and solubility products	Identify the relationship between Qs and Ksp in precipitation reaction based on experiment data (LOT)
	Determining ΔH reaction based on Hess Law, standard H data, and bond energy	Determine ΔH reaction based on Hess Law (HOT) Figure out Hess cycle diagram (HOT) Figure out H diagram (HOT)
	Understanding collision theory to explain chemical reaction	Determine molarity of solutions (LOT) Explain collision theory in (LOT)
	Analysing hydrolysis salts	Identify salt types (LOT) Identify hydrolysed salts (LOT)
XII	Explaining vapour pressure depression, boiling point elevation, freezing point depression, and osmotic pressure	Observe freezing point depression Calculate freezing point depression of solutions (LOT)
	Explaining reduction and oxidation reactions in electrolysis	Observe reactions that are occurred at cathode and anode (LOT) Write reaction that are occurred at cathode and anode (LOT)
	Describing structures, nomenclature, properties, functions, and identify carbon compounds	Differentiate chemical properties of ester (HOT) Write the name of ester compounds (LOT) Write esterification between alcohol and carboxylate acids (LOT)
	Describing structures, nomenclature, classification, properties, and functions of macromolecules	Identify natural and synthetic polymers (LOT) Explain physical and chemical properties of polymers (LOT)

The formulation of LOI listed in Table 1 above showed that the majority formulation was fallen into the LOT category indicated by the instruction words, such as identify, explain, observe, and write. Several LOI formulations already included HOT category, such as determine water molecules in hydrate compounds, design an experiment to prove Lavoisier Law, prove the application of the Law of Constant Proportion through calculation, figure out Hess cycle diagram, and differentiate chemical properties of ester.

It seemed that teachers found difficulties in formulating LOI for HOT category**.**

To promote high quality of learning, it was important to formulate LOI included in HOT category. Based on Bloom's Taxonomy, the instruction words that could be used to formulate HOT of LOI were compile, create, develop, generalise, integrate, propose, appraise, assess, criticise, depend, evaluate, justify, support [11]. For example, for the topic of scientific methods it could be formulated indicators, such as "analyse the steps of scientific methods used in an experiment or evaluate the appropriate steps of scientific methods use in an experiment. For the topic of salt hydrolysis, it could be formulated indicators, such as differentiate hydrolysed and non-hydrolysed salts. For the topic of freezing point depression, it could be formulated indicators, such as investigating the effect of solution concentration towards freezing point depression. From the formulation of indicators made by the teachers, it could be concluded that the teachers needed to learn how to formulate higher level indicators of learning outcome, i.e. an indicator with HOT categories. This will produce high quality of learning because the LOI will be used to guide all process of learning.

3.2 The Process of Learning

The process of learning was viewed from three terms of teaching methodology, namely: approach, methods, and strategy. The terms used by the teachers in chemistry learning at schools were described in Table 2.

TABLE 2. APPROACHES, METHODS, AND STRATEGIES OF LEARNING

Approaches	**Methods**	**Strategies**
Inductive	Information	Inquiry
Deductive	Discussion	Problem based learning
Scientific	Experiment	Cooperative learning
Contextual	Question-answer	Discovery learning
Process		5M learning

Based on the information in Table 2 above, it could be mentioned that teachers used two opposite types of scientific approach, i.e. inductive and deductive approaches. In addition, they also used several innovative approaches, such as scientific approach in terms of 5M learning strategies, contextual approach, and process skill approach. These approaches were considered relevant because those approaches gave opportunities to students to learn in scientific ways. The scientific approach is the learning approach that is recommended by the government to be used for all teaching learning process in implementing the 2013 Curriculum, i.e. the 5M learning strategy [10].

The methods used for conducting learning process were information, discussion, experiment, and question-answer. It could be mentioned that these methods were appropriate to be use in chemistry learning. The use of information methods could not be neglected due to students' ability in learning. It was found that some students had problems in reading, analysing problems, and in promoting questions. So, teachers' patient was badly required in facilitating student learn. It seemed that the experiment method was also rarely used. This had a strong relationship with learning facilities provided at schools and time available for whole semester or annual teaching. The existence of some chemicals and chemical apparatus, sometimes, limited laboratory activities [12][13][21].

The use of discussion method was not always seen fruitful for learning because of imbalance students' participation in group learning. Some students were actively involved in discussion, but some just sitting calmly, enjoying their time, and waiting the results. Sometimes, teachers did not aware of this situation and think that the discussion was running well.

The question-answer methods was important in learning. However, most students did not like to be asked. They prepare to listen to teachers. When the teacher asks question, they do not directly answer it, but they scanned the book to find an answer. Once he or she found the answer, he or she would rise hand up and respond to the question. What was the meaning? This meant that the students did not have the knowledge on top of their head. The knowledge was still in the book. Some teachers were also not aware of this situation and still rewarding the students.

The strategies used were inquiry learning, discovery learning, problem based learning, and 5M learning. These learning strategies were considered relevant under the usage of scientific approach. Because those strategies encouraged students to learn actively by involving observation, problem formulation, hypothesis or prediction formulations, data collection, data analysis, conclusion formulation, and findings communication. One strategy of learning that did not appear yet was the project based learning. It seemed that this had connection to the capabilities of teachers to design project for students and time available for semester or annual learning process at schools. Limbach and Waugh in [11] reported that due to the tight schedule for teaching, teachers may have difficulties planning HOT-filled lessons to be completed in one or two class periods. Subagia and Wiratma [7] found out many problems faced by teacher in conducting learning process at schools.

In the implementation of 2013 Curriculum, all teachers were trained to use the 5M learning strategy. It was seen explisitly on teacher lesson plans, i.e. the use of 5M steps. However, teachers failed to provide phenomena to be observed by students in order to obtain expected observation results. Therefore, the following step, i.e. is the questioning, did not work as expected because the students did not have good observation results which produced good questions. So, the rest of 5M steps was described unclearly. It was important to know that in order to use 5M learning strategy, teachers should think carefully of observing and questioning steps and also predict the result of observation leading to arise appropriate questions and the question formulation leading to the following steps of the 5M learning strategy.

3.3 Factors Influencing Learning

There were several factors influencing the learning process of chemistry at SMA. These factors came from three different resources, namely: the students, the teachers, and the schools. The student's factors were low students' motivation, low students' discipline, low students' ability to promote problems or questions, low students' effort in reading, and low students' ability to analyse problems. It seemed that these factors were connected to each other. For example, low students' motivation caused low effort in reading as well as low ability to analyse and promote problems or questions. Low students' ability in learning caused low students' discipline in the classroom. Aritonang [22] reported that the way of teachers teaching influences the way of students learns. It was mentioned that low students' motivation was caused by non-meaningful learning demonstrated by teachers.

The teacher's factors were the selection of appropriate methods and strategies of learning as well as the preparation of interesting lessons. The selection of appropriate methods and strategies in preparing lesson was not easy. In this case, teachers needed to fully understand about the characteristic of materials as well as students' learning style. Every topic had different characteristics requiring different learning strategies. Every student had different learning styles that might not be fit with the learning strategy used by the teacher. Therefore, teachers should select the most appropriate strategy swinging from students' characteristics and the characteristic of learning materials. Many teachers still leaning on the use of direct instruction model of learning because they felt confident to do it. Sometimes, they did not feel confident to conduct learning process using new strategies.

The school's factors were learning environment, learning facilities, and learning resources. The environment of learning, especially classroom environment, should fit the standard, e.g. the number of students in a classroom. The biggest number of student in a classroom, the lower quality of learning will be produced and vice versa, the smaller number of students in a classroom, the higher quality of learning will be produced. In addition, the existence of learning facilities and resources was important to promote good quality learning process. The process of learning could not be optimally conducted if there were not enough facilities and resources to support it. A clear example could be seen on the teaching learning process at laboratory. Teacher would not use laboratory if the laboratory was not well equipped [12, 13].

IV. CONCLUSION

The quality of chemistry learning process discussed in this paper is the phenomena of chemistry learning process conducted at schools as the implementation of 2013 Curriculum in a small scale. In general, it can be mentioned that the quality of chemistry learning process is still low. This can be seen from the LOI formulation made by the teachers and the process of teaching. The improvement of chemistry learning quality can be started from improving teachers' capabilities to formulate LOI because the LOI will be used to guide all process of learning including planning the lesson, choosing learning strategies, conducting learning process, and formulating instrument for assessing students' learning outcomes.

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The Local Wisdoms in Bahasa Indonesia Text Books in a Primary Class: Ethnopedagogy Study

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***Abstract*— This study aimed at producing an integrated thematic book in terms of Indonesian Language and Literature for grades I and II with local Balinese wisdoms. Therefore, in year 1, exploration of themes / subthemes of the materials were conducted. In year 2, the draft plan was developed into a draft of the book. In year 3, the draft of the book was tested from the validity of experts, content, design, and media. Users' responses were based on field testing. The methods of data collection were questionnaire, observation, interview, and test. The results showed that: (1) integrated thematic book with sustainable local of Bali was qualified as a textbook. (2) The validity (experts, content, design, and media) was qualified as valid. Students' understanding valued 75 (good). Thus, this thematic book was qualified as teaching materials.**

Keywords—language; Indonesia; local wisdom; ethnopedagogy

I. INTRODUCTION

Approaches should result good characters, but on the contrary, they create people with bad behaviors [1], [2]. Lickona [3] mentions that 1) the moral of our society is not strong; 2) many members of societies live a less moral life than they once had that are characterized by a) a moral decline in attitudes and behavior; b) a sexual behavior; c) a bad language (impolite); and a brutal and vulgar media culture. This is proven by the ISIS movement that changed the world and claimed the death toll through terror bombing in France in 2015 and the bomb terror of Jakarta on January 14, 2016 [4]. This shows that modern knowledge merely conferred on past welfare, which prompted humans to pursue temporal satisfaction, but was unable to resist the appetite of conforming to the 'chaotic' condition as what was written in Kompas in an article entitled Mortifying Moral Damage, it was stated that during 2004-2011 Kemdagri recorded that 158 regional heads (governors, regents, mayors) were involved in corruption [5]. During 2008-2011, 42 DPR members were involved in corruption. Cases of corruption occurred in a number of institutions such as KPU, judicial commissions, KPPU, General Directorate of Tax, and Bank Indonesia. Based on this, the aims of this research were 1) to develop a draft of an integrated thematic book in order to fulfill the requirement as a teaching material 2) to fulfill the validity requirement (expert, content, design, and media). It was important to reduce these adverse effects.

The world of education cannot be separated from cheating such as cheating by students in the form of exam cheating and cheating by lecturers in the form of plagiarism. In [5], it is mentioned that plagiarism occurred in several universities, they were, Bandung, Gorontalo, Yogyakarta, and Jakarta. Academicians' plagiarism and students' cheating are identical to corruption [6].

The scrutiny of the current state inspired the researcher to flash back to the past, which is traditional knowledge. The traditional knowledge, although it is not systematic and had not been studied with scientific systems, but empirically proven for centuries to have organized the community with its cultural attributes nicely and regularly related to astrology, agriculture, religious, socio-cultural, traditional health as recognized nowadays [7]. This means that western knowledge is not always better and or better suited than eastern knowledge. Because knowledge based on western cultures was different from eastern cultures. As a result, there is a cultural conflict in students' learning. Therefore, learning needs to be based on local cultures / local wisdoms through Ethnopedagogy, because the cultural incompatibility was resulted in conflicts [8], [9], [10].

There is something substantial that need to be examined in terms of formal education system. The formal education system of Indonesia tends to follow the curriculum developed in the western countries. Western education tradition views education as a subculture. Therefore, education will determine the development of the cultures. Indonesia, which used the western education system, will automatically incorporate western cultures in Indonesia's education system. This was where conflicts arouse not only from the theoretical cultures, conflicts would also happen in learning, democracy, drugs, sex, and so on.

According to [11], different students' cultural backgrounds become a problem for students to understand western science. In line with this, Suparman [12] also reveals that there is a socio-cultural linkage to students' learning. Therefore, the

need for alignment should be done, between the traditional knowledge (local wisdom) with the modern knowledge [13]. If this alignment led to a harmonious learning, then the teaching of knowledge would reinforce the learning outlook about nature [14]. This indicates the opening of opportunities to integrate local wisdoms in education both related to sociology, geography, cultures, Ethnopedagogy, and psychology [15].

The availability of textbooks in elementary schools, containing Balinese science and the pedagogy context of Catur Pramana is high [16]. This high level of accessibility indicates the importance of socio-cultural, religious sociology, and religious psychology. Therefore, psychology, especially the psychology of education becomes one of the contributions of the material selection [17]. Materials as learning discourse are related to achievement. Achievement begins with the accommodation relationship between the communication structure and the structure of science. Discourse in the context of science production needs to be oriented to the structure of science. Chapter structure of science based on writing should be centered on the pedagogical explanation of textbooks to be matched with the ability of readers [18]. Teachers are not given too many tasks, except reading books [19].

Matching pedagogical explanation of textbooks with readers' ability needs to be done/ arranged to support learning activities [20], [21]. Therefore, valid learning tools such as books should be paid attention. Therefore, the validity of the book affects the cognitive and affective learners [22]. The effect of validity towards affective learners shows the value of a character in the formation of personality [23], [24]. Therefore, the preparation of learning tools, particularly textbooks, becomes important in the efforts to optimize learning services. This service is important because it will affect the politeness, including language politeness [25]. Modesty is integral to the character. Character education is delivered and integrated into every subject. This integration can support effective learning [26]. This means that teaching was done in a multidisciplinary approach [27]. This approach benefitted that education was done without reducing the time of delivering the materials. As the impact, there is an influence of character education on self-esteem and personality progress [28]. Self-esteem and personality progress were the individual motivations that influenced students' response. Students' response, in this case, elementary school students, grades I and II had a positive motivation to the course of research [29]. A negative response was the source of bias so that it influenced the interpretation [30]. Beyond that, motivation also affected the response [31].

II. METHOD

Regarding with the purpose, the focus of this study was to develop an integrated thematic book in terms of Indonesian Language and Literature for grades I and II with local Balinese wisdoms. In order to accomplish this goal, there were some processes conducted: 1) validity of experts from the contents, the sequence of the materials which were based on local Balinese wisdoms, 2) teachers' responses, students' responses, and 3) the revision of the textbook based on the experts' judgments, teachers, and students in order to be implemented as teaching materials. In the year 1, defining and designing the textbook had been conducted. In the year 2, the development of the textbook had been conducted and in the last year (in 2017), the evaluation had been conducted.

The evaluation was in the form of formative evaluation. It was conducted in the end of teaching and learning process in March and April 2017. Every week, the teachers were given questionnaires and students were observed as the test of evaluation. The purpose of this process was to provide suggestions or recommendations on the weaknesses of the textbook. The result of the questionnaires and observation were discussed and reviewed by the team as the basic process on developing the revision of the textbook.

The subject of this research were students and teachers of grades I and II in Bali, which comprised of 4 elementary schools in Buleleng, 4 elementary schools in Klungkung, 4 elementary schools in Denpasar, and 4 elementary schools in Tabanan. The samples of the teachers were 8 and the samples of the students were 8 classes in every regency. Thus, the total samples of the teachers in Bali were 32 (teachers for grade I and II) and the total of the students' sample was 32 classes (students of grade I and II). The object of this study was an integrated thematic book in terms of Indonesian Language and Literature for grades I and II with local Balinese wisdoms.

The textbook was tested from the validity of content, design, and media. In this stage, the process of validation was validated by the experts of Indonesian Language and Literature. Meanwhile the validation of design and media was validated by experts in those fields. The users' response was conducted by the teachers and the students of grade I and II in Bali. To get the users' responses, the researcher conducted the test in small scale in one of the school in Bali, SD Lab Singaraja Undiksha. Meanwhile, the test for the big scale was conducted in all school samples in Bali.

The method of data collection is based on the types of the data needed. The obtained data, which have been validated (content, design, and media) were collected through questionnaire and observation. The teachers' responses were collected through questionnaire meanwhile students' responses were collected through observation. The test was used to assess students' comprehension.

The obtained data from the teachers' questionnaire and students' observation during the learning process were analyzed by descriptive qualitative analysis. The validated data, therefore, were analyzed using descriptive statistics.

III. FINDINGS AND DISCUSSION

A. The Review of Teaching Materials with Local Balinese Wisdoms

The result of the validity from teaching materials with local Balinese Wisdom was 3.1 (valid). The validity of this result could be accomplished because in the first year, the development of the textbook with its literature review had

been selected and described into narrative, descriptive and exposition text. After that, the texts had been illustrated in pictures. Based on the pictures provided in the textbook, then students were asked to tell the text orally as the aspect of speaking skill. The selection and the classification of the vocabulary and language structure in the books aimed at introducing the lexical, grammatical, and 4 major aspects in Bahasa Indonesia, namely, listening, speaking, reading and writing for the students. This book also intended to foster students' understanding toward the materials.

The texts that had been created were selected and arranged on their subthemes of character education based on the core competencies, basic competencies, indicator and the instructional objectives. In line with this statement, the researcher had arranged the themes, subthemes, core competency, basic competency, indicator, subthemes combined with the first draft until the final draft systematically and logically with the insertion of the local Balinese wisdoms in order to be clear. These can be seen briefly in table 1 and table 2 as follows.

TABLE 1. THEME/SUBTHEMES,CORE COMPETENCY AND BASIC COMPETENCY IN BAHASA INDONESIA FOR GRADE I AND II

Class / Smt (1)	Theme/ themes of local Balinese Wisdoms (2)	Subthemes (3)	Core Competency (4)
1/1	Theme 1: Myself/ *Atman Budhi Manah Indria*	Subtheme 1: My New Friends and I	1. Appreciating and practicing the religious value that students are following 2. Appreciating and practicing honest behavior, discipline, responsibility, caring and feeling confident in interacting with family, friends, and teachers.

TABLE 2. BASIC COMPETENCY, INDICATORS, SUBTHEMES OF LOCAL BALINESE WISDOMS, AND SOURCES OF LOCAL BALINESE WISDOMS IN BAHASA INDONESIA FOR GRADE I AND II

Basic Competency (5)	Indicators (6)	Subthemes of Local Balinese Wisdoms (7)	Sources of Local Balinese Wisdoms (8)
1.1. Being grateful to the opportunity to learn Bahasa Indonesia as a medium of national communication.	• Identifying the steps of introducing self. • Introducing self by stating the complete name. • Introducing self by stating the nick name. Mentioning friends' names.	Purusa dan pradana	Theme: Bhagawad gita III. 42 and Kathalepanisad 1.3.3-4 Subtheme:Bhagawad Gita XIII. 23

Based on the table 1 and table 2, it can be seen the relationship among column (1), (2), (3), (4), (5), (6), (7), and (8). Those are related to each other. Theme/ subthemes, core competency, basic competency, indicator, subthemes of local Balinese wisdoms and the sources of local Balinese wisdoms in Bahasa Indonesia for grade I and II had been developed as the book plan of character education with the insertion of local Balinese wisdoms.

B. The Validity of Teaching Materials

The validity of the book could be seen from: a) Content validity including: 1) the structure which consists of (a) the appearance was 3.1 (valid), and (b) the organization was 3.2 (valid). 2) The material which consists of (a) the relation between materials and local Balinese wisdoms was 3.3; (b) the suitability among material, basic competency, and indicator 3.2; (c) the clarity was 3.1 ; (d) The attractiveness was 3.2 ; (e) The level of difficulty 3.2; (f) Ethnopedagogy was 3.5; (g) eco-pedagogy was 3.5; (h) the relevance with character education 3.5; (i) The integration of character values in the textbook was 3.5; 3) language consists of : a) The language used in textbook was 3.5; b) age compatibility was 3.5.

Based on the explanation above, it can be seen that the content validity had been examined in accordance to (1) structure; (2) materials; and (3) language in order to be qualified as teaching materials. This integrated book was qualified as teaching materials because first, the process of composing the sentence structure was based on the findings of students' sentence structure in a low class (grade I and II in elementary school). The organization of the language structure of the book was based on the students' language structure. Thus, it can enhance the effectiveness of communication in the process of learning. The second one, the insertion of local Balinese wisdoms in the teaching materials was suitable with the local culture of the students so that it can foster students' understanding and strengthen the reliability of the teaching materials. The continuity of the materials with students' culture is not only beneficial for enhancing students' understanding, but also to make cultural endurance from the era globalization. Moreover, the language used in the book was qualified as valid because the vocabulary used fitted with students' vocabulary. It was based on the local Balinese wisdoms of the students' culture (Ethnopedagogy) and from the students' environment (eco-pedagogy).

The validity of design comprises of cover's format including: a) Attractiveness was 3.2 (valid); b) the adjustment of color and cover image was 3.3 (valid); c) the font and its use was 3.4 (for grade I and II); d) image feasibility was 3.4; e) the relevance of the pictures with local Balinese wisdom was 3.4 (Ethnopedagogy); (f) the relevance of the pictures with the environment was 3.4 (eco-pedagogy). In this case, design and media are closely related to each other, thus those had been integrated as one packaged. The validity of the design and media had been examined based on the sequence of the draft plan with the local Balinese wisdom in accordance with the culture and environment.

Matching students' culture with the teaching materials, design, and media had provided the suitable pictures of

students' culture in the book. The suitability of environment also had provided appropriate teaching materials, design, and media with the environment of the students (eco-pedagogy).

The insertion of local Balinese wisdoms that covers students' culture (Ethnopedagogy) and students' environment (eco-pedagogy) in teaching materials is not only beneficial for the students and teachers, but the outcomes will also give positive long-term impacts for the society and governments. It is because the mental revolution was done through the implementation of character education in an integrated thematic book sustainable ethno-eco-pedagogy.

C. The review of users' responses

1) Teachers' responses

The teachers' responses towards an integrated thematic book for grades I and II were: First, the material of "semut-semut api" with its meaning was not suitable for students in a lower grade. It was hard for students in their age to understand the meaning of that song. Nonetheless, it will be good if the meaning of this song is inserted in teachers' book, but not on students' book. Therefore, it is suggested that the material "semut-semut api" concerns more in the aspects of its lexical, grammatical, and the speaking skills. Thus, the revision was only on the meaning of the story "semut-semut api" from students' book.

Moreover, the exercises in the book should match with the time allotment of some materials that should be learnt by the students. However, after providing the explanation to the teachers that the exercises were not done in the school only, but also done by in students' as their practice at home.

The teachers' responses on the insertion of local wisdom in national curriculum were good. The correlation of local wisdom inserted in teaching materials make teachers easier to teach the students and the students were easier to understand the concept of the materials because it is closely related with their culture and their environment. It fosters the students in the process of learning and makes students more responsive in the process of learning. Therefore, it is suggested that the integrated thematic book with local Balinese wisdoms can be developed more for grades III-VI.

2) Students' responses

Students were so enthusiastic in the process of learning either for the design, the pictures, and the materials given by the teachers. They were actively involved in the process of learning and showed good response towards the materials given by the teachers. Students were full of pep in answering teachers' question or answering the task given by the teachers.

IV. CONCLUSION AND SUGGESTION

- This research showed that it was easier for students to study if the learning was done according to the cultural background of the students themselves (Etnopedadogy), which was different from the learning that was conducted conventionally by treating the materials for all students with different backgrounds alike. For instance, Balinese students had no backgrounds about trains which made the materials about trains abstract, but it was different in case of Legong dance. It was because Legong dance was a part of their cultures so it made them easier to understand.
- The process of learning became easier and simpler in this learning compared to the previous one, because besides using etnopedagogical approach, ecopedagogy was also used that was students learned through the environment surrounding them. For example, Balinese students would learn easier with the condition, which was like their environment in Bali, compared to when they had to study with an environment that did not resemble their native environment such as the flora and the fauna. Balinese students would recognize dogs faster than elephants and tigers.
- The choice of words played an important role in the learning process. It was because the words used in creating the book for grades I and II were the words from the result of the previous year.
- The materials arranged were based on the cognitive development of students grades I and II, so it was easier for them to understand the materials.
- The collaboration of the points (1) – (8) in arranging the materials enabled students to understand the materials better.

Thus, an integrated thematic book with local Balinese Wisdom for grade I and II was qualified as teaching materials. The validity (experts, content, design, and media) was qualified as valid (3.1) and users' responses valued ≥70 (good). Those can be reached, because the teaching materials were integrated with local Balinese wisdom, which is closely related with students' environment (eco-pedagogy) and students' culture (Ethnopedagogy). Thus, it is suggested that the teaching materials were integrated with eco-Ethnopedagogy.

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Developing Problem-Based Module to Train Life Skills

In The Field Of Adolescent Reproduction Health

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***Abstract*—Nowadays, adolescents are facing issues of sexual and reproduction health which is known as Three Basic Threat of Adolescent Reproduction Health, and are called *Triad KRR*. In order to handle the risk, adolescents should acquire life skills in the field of reproduction health. The aim of this research were to produce problem-based module to teach life skill in field of adolescents' reproduction health and students' life skill after using the module. The study was a development research, conducted at Junior High School. The result showed that this module could be used to teach life skills in the field of adolescents' reproduction health. The students' learning mean score by using this module were: problem solving skill was 7.9; thinking skill was 7.8; and interpersonal communication skill was 7.9, which all of them were categorized as good.**

Keywords—problem based module, life skill, reproduction health

I. INTRODUCTION

One of public health issues that is potentially arising in Indonesia is reproduction health issue. Reproduction health is closely related to human life quality in the future. Reproduction health issue becomes more apprehensive because it happens to the adolescent. Reproduction health issue faced by the adolescent is the increasing of adolescent who are infected by HIV/AIDS and sexual disease, sexual issue such as undesired pregnancy, abuse of narcotics, alcohol, psychotropic, and addictive substances.

Every adolescent has potential risk to have reproduction issue, because it is related to the physical growth and development. In teenage ages, both boy and girl are felling sexual urges. This urge is rising when there is an external stimulus both psychologically or physically. Adolescents eager to know about sexuality and reproduction. Information about sexuality and reproduction are commonly gained from internet, friends, or incomplete information from the parents. Adolescents' knowledge about adolescent reproduction health is still low [1], [2]. Minimum information about adolescent reproduction health, friend social environment, and the society are the factors of the adolescent to get reproduction health issue. The arising of permissive situation of the society triggers the premarital sexual intercourse of the teenager couples [1]. Lestary and Sugiharti stated that adolescent risky behavior is significantly related to the knowledge, attitude, access of the information media, and low quality level of communication with their parents [3]. Azinar also stated that premarital sexual behavior is significantly related to the adolescents' behavior, access and contact to pornography media, sexual attitude and behavior of their close friends [4].

To make the adolescents are able to face many challenges, including the risk of *Triad KRR*, so they need to be helped to get right information about adolescent reproduction health. As stated by [5], [6], and [7] that giving information of adolescent reproduction health should be conducted as soon as possible by school to improve students' understanding about adolescent reproduction health. [8], [9] described that one of students' information sources about adolescent reproduction health is teacher. As stated by Citrawathi, et al. that students want to have information about adolescent reproduction health given by teacher at school [2]. Besides improving students' understanding about adolescent reproduction health, the adolescents should be trained life skills in the field of adolescent reproduction health, including: (1) problem solving and decision making skills, (2) thinking skill, (3) interpersonal communication skill, (4) keeping physical health skill, (5) be firm skill, (6) trusting and self-respect skill, and (7) handling stress skill [10].

Problem solving and decision making skill, communication skill and thinking skill can be taught through problem based learning (Mayasari and Adawiyah, 2015[11]; Permana, et al, 2016[12]). To facilitate the problem based learning, a problem basedadolescent reproduction health module should be developed. The research problem of this study was: 1)How is the eligibility of the modules developed to promote life skills in the field of adolescent reproductive health? 2). How the students' life skills in adolescent reproduction health after following learning process by using problem based adolescent reproduction health module.

II. RESEARCH METHODS

This study was a development research that used development model of Dick and Carrey [13]. There were five

steps of development, namely: (1) subject setting, (2) need analysis, (3) developing module, (4) making module, (5) review and module try out. The developed problem based adolescent reproduction health module was assessed by subject expert and expert of learning technology and was tried out on teacher and students of Junior High School.

Subjects of this research were expert of anatomy study and human physiology, expert of learning technology, students of class IX Junior High School, and science teacher at class IX SMP Laboratorium, Ganesha University of Education.

The collected qualitative and quantitative data were analyzed descriptively by setting the data systematically, organizing data into category, conducting synthesis, arranging certain pattern, and drawing conclusion.

III. RESEARCH FINDING AND DISCUSSION

From the result of syllabus analysis, in-depth interview, and questionnaires, so the developed problem based adolescent reproduction health module emphasized on main material of human reproduction system. Problem based adolescent reproduction health module was started with adolescent reproduction health problem taken from printed media, internet, result of observation around the students, problem experienced by the students, or result of simulation. Structure of developed problem based adolescent reproduction health module consisted of some components such as cover, introduction, material (content), self-assessment, and references. Cover related to clarity, attractiveness, and conformity of cover with module material. Assessment at introduction, the evaluated components included: (a) attractiveness and conformity of problem with the discussed material, (b) clarity, operational, measurability, demand, and specification from the purpose. In material part, the evaluated components were: (a) conformity of content with problem and purpose, (b) organization and the depth/coverage of material, (c) the benefits for students, (d) the role in motivating students to learn, (e) attractiveness of content and language clarity, and (f) conformity, quality, attractiveness, and picture quality. In self-assessment, the evaluated components included; (a) conformity of self-assessment with the purpose, and (b) instruction of working. Meanwhile, components of references included writing consistency, upgrade, and layout. Result of the evaluation and try out is showed by Table 1. From the conducted evaluation, the developed problem based adolescent reproduction health module was declared feasible (mean score 3.87) as a learning source for Junior High School student about adolescent reproduction health. Result of the learning achievement in learning process by using problem based adolescent reproduction health module can be seen in Table 2.

TABLE 1. RECAPITULATION OF LEARNING ACHIEVEMENT OF PROBLEM BASED ADOLESCENT REPRODUCTION HEALTH MODULE

Module Component	Evaluation by:			
	Content Expert	Learning Technology Expert	Teacher	Student
Cover	4,00	4,00	3,90	3,45
Introduction	3,89	3,89	3,96	3,60
Material	3,92	3,75	3,94	3,87
Self-assessment	4,00	3,67	4,00	4,00
References	4,00	3,67	4,00	3,80
Mean	3,94	3,81	3,96	3,76
Score		3,87		

TABLE 2. LEARNING ACHIEVEMENT WITH PROBLEM BASED ADOLESCENT REPRODUCTION HEALTH MODULE

Learning Achievement	Mean	SD	Category
Thinking Skill	7,8	0,54	Good
Communication Skill			
Problem Solving Skill	7,9	0,43	Good
	7,9	0,61	Good

SD= Standard Deviation

The gained mean score as stated on Table 2 is for thinking skill was 7.8, communication skill was 7.9, and problem solving skill was 7.9. The three life skills in adolescent reproduction health were categorized as good.

Age of the student class IX Junior High School approximately between 14-15 years old. Based on Piaget' theory of cognitive development, Junior High School students have reached formal operational stage. It means that based on their cognitive development, Junior High School students can be taught by using problem solving teaching strategy. Santrock described that in formal operational stage, these students have ability to think logically about abstract concept, systematically and scientifically in solving a problem [14]. In this study, the students were given problem related to adolescent reproduction health, and they were taught to solve the problem and found solution of the problem.

Problem based adolescent reproduction health module was designed based on need analysis so it was appropriate with Science Subject syllabus in Junior High School, teacher' needs, and student's needs, as well as it was deserved to be used as learning sources in teaching Adolescent Reproduction Health Education at Junior High School. By using problem based adolescent reproduction health module as learning source, the learning process became more innovative, contextual, interesting, and impressive for the students, so it motivated the students to learn.

As proposed by Prastowo, learning material that is designed based on students' needs, so the instructional would be more interesting, impressive, fun, so it would trigger effective learning process and improving learning output [15]. It is in line with the research finding of Adnyana and Citrawathi [16], Citrawathi, et al [17], [18], and Adnyana, et al [19], which found that a designed learning material based on the needs and taught by using

appropriate teaching strategy could improve process and students' learning achievement. Nuroso and Siswanto stated that the success of learning process is determined by the appropriateness of student's level thinking with the teaching material. Therefore, learning material development should be suited with student's cognitive development [20].

Based on some of the research, it can be concluded that adolescents have low understanding about adolescent reproduction health, and they need information of adolescent reproduction health [1], [2], [21], [22]. From previous research, it was fond that adolescent reproduction health education could be integrated into Science Subject. Integration of adolescent reproduction health education with appropriate teaching strategy is the appropriate way to do in fulfilling one of the reproduction rights of Junior High School students as an adolescent that is information about adolescent reproduction health [2], [23], and [24]. As stated by [5] and [6], giving information about adolescent reproduction health should be done as soon as possible by school to improve students' understanding about adolescent reproduction health.

Sugiyanto and Suharyo described that one of information sources of students about adolescent reproduction health is teacher [8], [9]. The same opinion was proposed by [24] who stated that student wanted to have adolescent reproduction health from their teacher at school. Giving information about adolescent reproduction health through adolescent reproduction health education is conducted by using problem based teaching strategy to teach students about life skills related to adolescent reproduction health.

Based on the above explanation, problem based teaching strategy was appropriate with student's development and could accommodate learning needs of Junior High School students about adolescent reproduction health, so the process and students' learning achievement could be improved. Problem based adolescent reproduction health module was stated feasible to be used as learning source (score 3.87) to give adolescent reproduction health education at Junior High School. Integration of adolescent reproduction health education and Science Subject with problem based adolescent reproduction health module showed the thinking skill, interpersonal communication skill, and problem solving skill were categorized as good.

In adolescent reproduction health education with problem based teaching strategy, the students learnt in group with heterogeneous group member. Heterogeneous group was formed based on academic ability and gender. The students in group simultaneously learnt as active participant as well as observer. Students were given a chance to collaborate to discuss problem of adolescent reproduction health. Collaborative skill is one of important skills that should be acquired by adolescents in order to be able to cooperate and exist in global world [25]. When discussing, students were trained how to communicate well.

Problem based teaching strategy triggers the students to actively participate in solving problem of adolescent reproduction health around their life. Besides that, problem based teaching strategy triggers conducive surrounding and harmonious relation among the students and student with teacher. Conducive and harmonious learning condition could develop respect, trust, and responsibility [26], [27].

In discussing given real problem, students are trained skills of problem solving, making decision, and giving solution from the reviewed problem. In order to make right decision, there should be thinking skill and interpersonal communication skill.

[28], [29] proposed that problem based learning uses problem as a focus to develop skills of problem solving, collaboration, communication, and learning material. Problem solving training improves internalization in students' learning process so there will be a meaning upon their object of learning. Problem based learning triggers the students to develop thinking and optimize thinking ability, so learning achievement could be improved. So, adolescent reproduction health education with problem based learning did not only improve students' knowledge about adolescent reproduction health, but also trained student's life skills in the field of adolescent reproduction health. The skills, that were trained through problem based learning, were problem solving and making decision skill, thinking skill, interpersonal communication skill. Knowledge and skills owned by the adolescents would decrease the risk of adolescent to have reproduction health issue, especially the *Triad KRR*.

IV. CONCLUSION

From this research, it can be concluded that: (1) problem based adolescent reproduction health module could be used to train and teach life skills in the field of adolescent reproduction health; (2) score of the life skills of the students were categorized as good, including thinking skill 7.8, communication skill 7.9, and problem solving skill 7.

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An Analysis of Instructional Material Need For Improving Students' Ability in Writing Cash Flow Reports

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***Abstract*— This article was aimed to analyze instructional material need for improving the students' ability to write a cash flow report. The writing of a cash flow report consisted of (1) method and format of a cash flow report; (2) procedure in writing a cash flow report, and (3) analysis of accounts that belong to asset group, liability and equity and the effect on the cash flow. To improve the ability of the students in writing a cash flow report, one can use Microsoft excel media by following three steps, i.e., (1) calculating the difference of the existing accounts; (2) analyzing changes of accounts in the balance sheet by understanding the concept of the effect of the change on cash flow; and (3) presenting the effect of the cash flow report on the cash flow report format**

***Keywords*— material, cash flow report, Microsoft Excel**

I. INTRODUCTION

In her study about cash flow report in a cooperative concludes that cash flow report in the cooperative produces positive cash flow in which there is an increment of cash and cash equivalent is obtained from operational activities[1]. Then, [2] in her article about cash flow report concludes stated that "cash flow greatly affects the measurement of liquidity where, in paying a short-term financial obligation, good cash flow is needed. Furthermore, [3] states that cash flow report and its analysis can be used as a basis management to get a clear image of cash flow. He also mentioned that the company can assess the needs of cash and cash equivalents in the future as well as the possible sources of cash that can be produced by the company. So, the company will work optimally. Those articles analyze the usefulness of cash flow as an analytical tool but not analyze the needs of instructional material to write a cash flow report.

According to [4], Accounting Department is the department which has the competencies or expertise in accounting subject area. The basic expertise qualification in accounting consists of financial accounting, managerial accounting, information system accounting, taxation and computer. To be an expert in financial accounting, the students are required to understand the basic concepts of accounting the process of writing a financial report from an economic entity. The financial report is based the Standard of Financial Accounting that is effective in general which consists of profit-loss report, balance report, retained earnings report and cash flow report. The financial report that was written follows long and very complex process. The process of writing a financial report is often called accounting cycle since the writing follows a long and repeated process. Accounting cycle starts with writing a journal, entering the journal to ledger accounts, writing trial balance, writing adjusting entry, writing a balance sheet and writing a financial report. A financial report that is resulted from the accounting cycle includes a profit-loss report, a balance report, a retained earnings report, and cash flow. A cash flow report can be written from a ledger and equivalent to cash and can also be written from a profit-loss report, two period balances. In the financial accounting standard that is effective in general, every economic entity or a firm, a service undertaking, business and manufacture is obliged to write a cash flow report.

The reality in the field during the educational process, various complex problems appeared, the students found difficulties in matters that are related to mastering and understanding the process of writing a cash flow. To understand the concepts in the writing of a cash flow requires a higher ability from the students. To make it easier for the students to understand the process of writing a cash flow report, they need to be helped with the use of a teaching model, teaching material, or material that is appropriate and tools and equipment or computer program to write a cash flow report. The teaching material needed in the writing of a cash flow should be adjusted to the students' need and the need of the users of information that will use the cash flow information. The problem that is investigated in this article is the instructional material need for improving the students' ability to write a cash flow report consists of the method and format of cash flow report, procedure in writing cash flow report, and analysis of accounts that belong to asset group, liability and equity.

This study used qualitative method which explained about the method and format of cash flow report, procedure in writing cash flow report, and analysis of accounts that belong to asset group, liability and equity. The study used some instruments in collecting the data such as observation guidelines, questioner, interview guidelines and documentation study. The documentation study related to the instructional materials need for writing the cash flow report by analyzing the students' input and report users, identifying

the objective of learning, and determining the instructional media.

The aimed of writing this article was to identify the material needed in writing a cash flow report. The discussion in this article can be used as material needed in teaching cash flow reports. For the author it can be used as material to develop a course book that is needed in writing a cash flow report.

II. DISCUSSION

In the [5] mentioned that a financial report that has to be accounted for by an economic entity consists of (1) balance sheet, (2) profit-loss report,(3) a report about equity changes, (4) a cash flow report and (5) a note about financial report.

A cash flow report is a report that presents relevant information about cash revenues and expenditures of a business unit in one period to the next period. A cash flow is the soul of every business and is the basic need of the progress of business and shows whether it can pay all its obligations. Cash flow is written with the purpose of giving information about the revenue and expenditure of the corporation during a certain period and gives information about operation, investment and financing.

If it's used together with other financial reports such as balance sheet, profit-loss report, held profit report, a cash flow has the use for giving information to the users of to (1) evaluate net asset change, financial structure, and ability to influence cash flow; (2) evaluate the ability of the corporation in producing cash and cash equivalent; (3) use information of historical cash flow as an indicator of amount, time, and certainty of cash flow in the future and (4) use for evaluating the need to use the cash flow by the corporation.

Cash is an element of the working capital which has the highest level of liquidity. The greater the amount of cash the higher it's liquidity. This means that the corporation has a smaller risk not to be able to meet its financial liability. But it does not mean that the corporation has to try to keep a great amount of cash, since the more the amount of the cash is, the more money that is idle so that it reduces its profitability. To maintain the liquidity means to maintain the balance between the flows of money that is expended. To prevent cash difficulty, both having more or less cash, then it is better for the corporation to determine the minimum cash or safety cash. The amount of safety cash is determined by the number of activities or the amount of cash need of the corporation.

The ideal amount of cash needed by the corporation, so far, has been standardized. However, there is a guide to determine the amount of corporation cash. According to H. G. Guthmann [6], the amount of cash that exists in the corporation which is well financed" ideally is not less than 5%-10% of the current asset.

A cash flow report has to report during a certain period and has to clarify the cash flow according o operation activity, investment and financing. The presentation of cash flow according to the three classifications is done according to the most appropriate way according to the characteristics of the corporation business. The incoming cash flow and the outgoing cash flow which is classified according to the activities can be seen in Fig. 1.

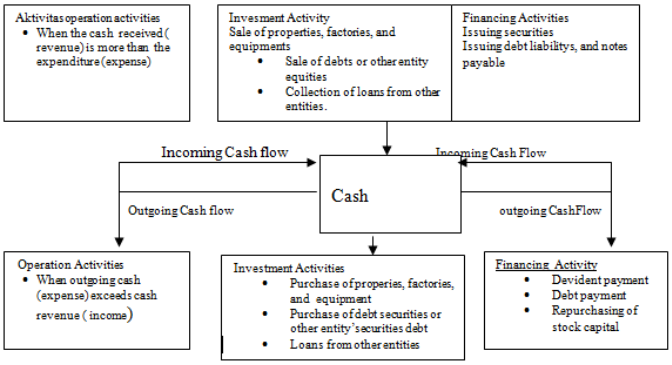

Fig.1. Incoming Cash Flow and Outgoing Cash Flow [7]

A. The Method and format of Cash Flow Report

There are two methods that can be used to present Cash Flow Report , that is, direct method and indirect method [5]. In the direct method, is reported cash revenue and cash expenditure of the operation activities. The difference between the two amounts is a net cash flow from the operation activity. In other words, the direct method directly subtracts the operation cash expenditure from the cash revenue. In the indirect method, the net profit or loss is adjusted by correcting the effect of the noncash transaction, deferral or accrual from the cash revenue or cash payment for the past operation and in the future and the income components or the expense that is related to the investment or financing cash flow.

Based on SAK ETAP, a cash flow report has to be written using the indirect method. In this method, the net cash flow from the operation activity is determined by adjusting the net profit or loss from the effect from (a) the change in the stock and the loan as well as the debt of the corporation during the current period; (b) the non cash entry such as depreciation, putting some money aside, deferred tax, profit and loss of foreign currencies which have not been realized, the profit of the association corporation that has not been divided and minority's right in the profit/ loss consolidation; and (c) all other entries that are related to investment or financing cash flow.

The cash flow that is classified into three classifications is the common format of a cash flow report. In the first part of the report is presented a cash flow from operation activity, followed by cash flow from investment activity and financing activity, and in the final part is presented an increase and decrease of net cash and cash equivalent during one period.

Things that need to be considered in presenting a cash flow report (1) the cash flow report only reports the cash flow during a certain period and is classified according to operation activity, investment and financing; (2) the corporation presents cash flow and operation activity from operation activity,

investment and financing by using the most suitable method for the business of the corporation. The classification according to activities gives information that makes it possible for the users to evaluate the effect of the activities on the amount of cash or cash equivalent. The information can also be used to evaluate the relations among the three activities; and a transaction can consist of the cash flow that has been classified into more than one activity; (3) a certain transaction may include cash flow which is classified into two or more activities.

B. Cash flow report format

In the following section is given an illustration about cash flow format using direct and indirect methods.

PT Sejahtera Utama Cash Flow Report The year that ends on the 31st of December			
Cash flow from Operation Activity :			
Cash revenue from customers	Rp xxx		
Cash payment to the suppliers and workers	(xxx)		
Payment of interest	(xxx)		
Payment of Income Tax	(xxx)		
Net cash flow from Operation Activity		**(Rp.xxx)**	
Cash flow from Investment Activity			
Purchase of land, building and equipments	xxx		
Proceeds from the sale of equipments	xxx		
Revenue from interest	xxx		
Revenue from dividend	xxx		
Net cash flow used for investment activity		**(Rp.xxx)**	
Cash flow from financing activity			
Proceeds from sale of equipments	xxx		
Proceeds from the issuance of capital stock	xxx		
Proceeds from long term loan	xxx		
Payment of debt of lease for financial business	xxx		
Net cash flow used for financing activity		**(Rp. xxx)**	
Net cash increase and cash equivalent			**Rp. xxx**
Cash and cash equivalent at the beginning of the period			Rp. xxx
Cash and cash equivalent at period end			**Rp. xxx**

Fig. 2. Direct method cash flow report format [5]

PT SejahteraUtama Cash Flow Report The year that ends on the 31st of December 2015			
Cash flow from Operation Activity			
Net Profit before tax and extraordinary entry	xxx		
Adjustment for :			
Depreciation	xxx		
Investment Income	(xxx)		
Interest Expense	xxx		
Profit of operation before change in working capital	xxx		
Increase in business loan and other loans	(xxx)		
Decrease in stocks	xxx		
Decrease in business debt	(xxx)		
Cash produced from operation			
Payment of interest	(xxx)		
Payment of income tax	(xxx)		
Net cash flow from operation activity		xxx	
Cash flow from Investment Activity			
Purchase of land, building and equipments	xxx		
Proceeds from the sale of equipments	xxx		
Revenue from interest	xxx		
Revenue from dividend	xxx		
Net cash flow used for investment activity		**(Rp.xxx)**	
Cash flow from financing activity			
Proceeds from sale of equipments	xxx		
Proceeds from the issuance of capital stock	xxx		
Proceeds from long term loan	xxx		
Payment of debt of lease for financial business	xxx		
Net cash flow used for financing activity		**(Rp. xxx)**	
Net cash increase and cash equivalent			**Rp. xxx**
Cash and cash equivalent at the beginning of the period			Rp. xxx
Cash and cash equivalent at period end			**Rp. xxx**

Fig. 3. Direct method cash flow report format [5]

C. Steps for writing a Cash Flow

Different from other major financial reports such as balance sheet, and profit-loss report, a cash flow report is not written from a trial balance after adjustment.

The information needed to write a cash flow report is generally obtained from the following sources: (1) a comparative balance sheet that gives information about asset changes, debts, and savings from the members during a certain period; (2) profit-loss report for cooperatives. A profit loss report is the same as the remaining result of operation (and change in dividend), which gives information about net profit and its components and payment of dividend during a period; and (3) supporting information, that is obtained from an analysis of change in balance sheet accounts that give information about the causes of cash and cash equivalent change.

According to [8] the steps needed in writing a cash flow report both in reporting a direct cash flow report and in reporting an indirect one are (1) to count change in cash or cash equivalent account balance by comparing the beginning

balance and the final balance which presents a net increase or decrease during the current period; (2) to count the net change of every balance sheet account other than cash account and cash equivalent account and the change category; and (3) to determine cash flow which is separated into three classifications, investment activity, and noncash financing activity and the effect of foreign currencies change which uses information from a comparative balance sheet, the profit loss report of the current period and additional information.

D. Analysis of accounts that belong to asset, liability and equity

To be able to classify accounts into operation activity, investment, and financing, there is a need to understand the balance sheet components. The components of balance sheet are Asset, Liability and Equity. Asset consists of current asset, long term investment, tangible fixed assets, intangible fixed assets and other assets.

Debt or liability consists of: current debt, prepaid income, long term debt, and other debts. Equity consists of capital stocks that have been stored, retained earnings, agio/ disagio capital stocks reserves and retained earnings.

Current asset is cash and other assets that are expected will become converted into cash, sold, sold, or consumed in a year or in an operation cycle.

Operation cycle is the average time between the acquisition of material and equipment and the cash realization through the sale of the product. This cycle starts from cash, supply, production and credit, and then goes back to cash again. Current asset is presented in the balance sheet according to the order of liquidity. The five important entries of current asset are cash, long term investment, credit, supply, and prepayment. Cash is reported at its fixed value, short term investment is reported at a reasonable price, business credit is fixed at the estimation of the amount collected, supply is generally reported at whichever is the lower in value between the cost and market price, and prepaid entries are valued at cost.

According to the [5] (PSAK No. 1) an asset is classified as current asset if the asset (1) is estimated to be realized or possessed to be sold or used in the normal operation cycle time of the corporation operation; (2) is possessed to be sold or for a short term and is expected to be realized within one year from the balance sheet data; (3) in the form of cash or cash equivalent and the use of is not limited.

According to [7] if the cash is limited for a purpose other than the paying off of the current liabilities than the amount is not allowed to be stated in the current asset. A short time investment in debt securities and equities are classified into three separate portfolios for of evaluation and reporting purposes. The three portfolios are categorized as follows: (1) securities that are held till the deadline; (2) trade securities, that are the securities which are especially bought and traded to be sold in a short time to earn profit or difference in price within a short time; and (3) securities that are available to be sold or those which are not classified as scurries that are being held until the deadline and trade securities. Trade securities have to be reported as current asset, while the securities that are available to be sold and securities that are being held until the deadline are classified as current or not current asset depended on the situation. All of the trade securities and those that are available to be sold are reported at a reasonable price. Every loss anticipated as the result of nonperforming loan, the amount and characteristics of each non-trade loan, and every loan that was being pawn as collateral has to be identified clearly. To present the supply accurately, the basis for evaluation is whichever the lower between cost or market price and the method for determining FIFO, or LIFO has to be stated. The expense that is prepaid which belongs to current asset which has been done for a profit (usually service) to be got in a year or one operation cycle. Long term investment that is called only as investment usually consists of four types of investment as follows: (1) investment in securities such as liability, common stock, or long term notes payable; (2) investment in tangible fixed asset which is currently used in operation such as land held for speculation; (3) investment put aside in a special fund, such as Repayment fund, retirement fund, or factory expansion; and (4) investment in the branches or affiliations of the corporation which are not consolidated.

Long term investments are usually held for years and are not acquired with the purpose of releasing it in a short time. This entry is usually presented in the balance sheet, which exactly below the Current Asset. Securities which are classified as available securities to be sold have to be reported at a reasonable price. While the ones that are classified as securities that are being held until the deadline are reported at an amortized price.

Properties, factories and equipments are assets that are durable and are used in a regular operation of the corporation. Assets consist of properties, or physical assets such as land, buildings, machines, furniture, tools, and nonrenewable resources except land. Most of these assets can be depreciated.

Intangible assets do not have physical substances and usually have a high level of uncertainty in relation to its future use. Intangible assets consist of patent, property right, good will, trade mark, and secret production process. In general, all of the intangible assets are amortized or deleted as expense for 5 to 40 years.

The entries which were listed in other asset groups are varied such as prepaid long term expenditure, nonperforming loans, prepayment to the branches, etc.

Current liabilities are the liabilities that are estimated to be liquidized through the use of current assets or by creating other current liabilities. According to [5] (PSAK No. 1) a liability is classified as short time liability if (1) it is estimated that it will be paid in a normal operation cycle of the corporation or; (2) the deadline is twelve months from the balance sheet data. Current liabilities consist of entries such as trade notes payable, and nontrade notes payable, business debt, received prepayment from customers, and the current part of long term loan which has been due.

Long term liabilities are liabilities which are adequately estimated not to be liquefied qualified in the normal operation cycle, but to be paid outside of that time. For example, debt, notes payable, mortgage debt, leases debt, etc.

Owner's equity is the difference between asset and liability and is the corporate responsibility to the owner of the corporation. In a personal corporation, the capital is shown in one account and is called Capital, in a firm the capital is shown in the account of each member and in a company the capital is shown with the capital account that consists of (1) the capital that is given by the share holders and is usually divided into 2 groups, i.e. capital stock and agio or disagio capital stocks (2) retained earnings is a group of earnings from previous years which are not divided as dividends. If it is desired to limit in order that all profits are not divided as dividends, then usually allowance for bad debts from profit are not divided; (3) the reevaluated capitals , if there is an evaluation of the assets of the corporation, then allowance for bad debts from retained earnings; (3) the reevaluation, if there is an evaluation of the assets of the corporation, then the difference between the old book and the new book is recorded as Reevaluated Capital; and (4) capital from donation, if the corporation receives an asset from a donation, Other capitals are entered into this group if the corporation capital that is reported cannot be entered into one of the groups above.

Once it is known that the accounts belong to current asset, fixed asset, long term liability and equity, they can be grouped into operation activity, investment activity, and financing activity. If the accounts belong to current asset and short term liability, they can be categorized as operation activity, if they belong to fixed asset and long term investment, they can be categorized as investment activity group and if they belong to the long term liability and equity, then they are categorized as financing activity.

After the accounts are categorized into the activities, there is a need to analyze again the effect on the cash flow, if there is an increase in the group of assets, it will cause a reduction in the cash amount, if there is a decrease in assets, it will cause an addition to the cash amount. If there is a reduction in asset group, it will cause cash to become less in amount.

Based on the steps in writing a cash flow report, we can make a cash flow report through Microsoft excel media with the steps as follows.

TABLE 1. COUNTING THE DIFFERENCE OF THE EXISTING ACCOUNTS IN BALANCE SHEET

Account Names	**2014**	**2015**	**Difference**	**Remark**	**Category**
Cash	Rp50.000.000	Rp296.000.000	Rp246,000,000	Addition	Cash and cash equivalent
Trade Loan	Rp100,000,000	Rp 176,800,000	Rp76,800,000	Addition	Operational
Goods Supplies	Rp150,000,000	Rp93,950,000	Rp(56,050,000)	Reduction	Operational
Prepaid expense	Rp75,000,000	Rp50,000,000	Rp(25,000,000)	Reduction	Operational
Land	Rp200,000,000	Rp200,000,000		Fixed	Investment
Building	Rp200,000,000	Rp200,000,000		Fixed	Investment
Building Dep Accumulation	Rp50,000,000	Rp59,000,000	Rp9,000,000	Addition	Operational
Patents	Rp100,000,000	Rp100,000,000		Fixed	Investment
Amortized patents		Rp2,500,000	Rp2,500,000	Addition	Operational
Vehicles		Rp20,000,000	Rp20,000,000	Addition	Investment
Vehicles Dep Accumulation		Rp3,000,000	Rp3,000,000	Addition	Operational
Trade Debts	Rp75,000,000	Rp157,750,000	Rp82,750,000	Addition	Operational
Income received in advance	Rp125,000,000	Rp112,500,000	Rp (12,500,000)	Reduction	Operational
Interest debt		Rp6,750,000	Rp6,750,000	Addition	Operational
Dividend debts		Rp8,000,000	Rp8,000,000	Addition	Operational
Expense debt		Rp750,000	Rp750,000	Addition	Operational
Long term debt			Rp225,000,000	Fixed	Financing
Retained earnings	Rp150,000,000	Rp311,500,000	Rp161,500,000	Addition	Financing
Ordinary stock			Rp250,000,000	Fixed	Financing
Dividend		Rp(8,000,000)	Rp(8,000,000)	Addition	Financing

The second step analyzed the change in accounts in the balance sheet by understanding the concepts, if there is an increase in the asset group, it will cause the reduction in cash amount, if there is a reduction in the asset it will cause an increase in the liability group. If there is an increase in the liability group, it will cause a reduction in assets and this will reduce cash amount.

The third step presented the analysis of the effect of the cash flow analysis on the format of the cash flow report as shown in Fig. 4.

Cash flow Report
Period: the 31st of Dec. 2015

Operation Activities		
Addition to Loan	Rp(76,800,000)	
Addition to Retained Earnings	Rp169,500,000	
Reduction in Trade Goods Supply	Rp56,050,000	
Reduction in prepaid expenses	Rp25,000,000	
Addition accumulation Depreciation Building	Rp(9,000,000)	
Addition accumulation Depreciation Vehicle	Rp (3,000,000)	
Addition accounts payable	Rp82,750,000	
Addition debt expend	Rp750,000	
Addition interest payable	Rp6,750,000	
Addition dividend debt	Rp8,000,000	
Reduction in Revenue from deferred earnings	Rp(12,500,000)	
Net cash flow from operation activity		**Rp247,500,000**
Investment activity		
Addition to vehicles	Rp(20,000,000)	
Reduction to Patents	Rp(2,500,000)	
Net cash flow from operation activity		**Rp(22,500,000)**
Financing activity		
Payment of dividend debts	Rp(8,000,000)	
Flow cash used for financing activity		**Rp(8,000,000)**
Addition to net cash		**Rp217,000,000**
Cash balance the 1st of January, 2015		**Rp50,000,000**
Cash balance per the 1st of March, 2015		**Rp267,000,000**

Fig.4. Cash Flow Report

III. CONCLUSION

In the light of discussion above, it can be concluded that the need for the material in teaching the writing of cash flow reports consists of (1) methods and format of cash flow report format; (2) procedure in cash flow report writing; and (3) analysis of accounts included in asset group, liability and equity and their effect on cash flow. To understand the concepts in writing cash flow reports Microsoft excel media can be used by following three stages: (1) counting the difference in the existing accounts in the balance sheet; (2) analyzing changes in the accounts in the balance sheet by understanding the concept of the effect of changes on cash flow; and (3) presenting the analysis of the effect of the cash on the format of cash flow report. So, the contributions of this study could be beneficial for the students and lecturers as an instructional material in writing the cash flow report. For other researchers, the result of this study could be used as a material to develop a textbook in writing the cash flow report by using computer program as a media.

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Recommendation System for Selection of Majors and Apprenticeship on Vocational and Training Education Based on Competency to Produce Demand Driven Graduates

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Abstract*—This research aims to produce demand driven human resources through vocational education and training. In the process of realizing it, it is necessary to innovate in several sectors, such as the selection of appropriate majors and apprenticeship process in accordance with the competence of students in the middle to college level. The method applied in this research is to do the selection process for new students by giving recommendation of the department which is in accordance with the competence of the students by taking the majors test. Then the students will take part in the apprenticeship, will take the test and with some component of the value of the course or course, the value of report cards, and the GPA will be processed and produce recommendation of apprenticeship location in accordance with the student's competence. The impact of this research is students who are in the appropriate majors, will affect the comfort in the learning process so as to maximize student potential. The apprenticeship location recommendation aims to provide work comfort, work motivation, good career expectations for students who attend apprenticeships in the industrial world. So the graduates produced by vocational education is demand driven.

Keywords*— Vocational Education and Training, Majors Recommendations, Apprenticeship Recommendations, Student Competencies, Demand Driven

I. INTRODUCTION

Education is an important impact to the nation, so education becomes a priority in the Nawacita (Nine Goals) of President Ir. Joko Widodo. The President is very supportive of the community in the field of education [1], At least by following the nine-year education program. By following the nine-year education, it is expected to increase the knowledge and skills to compete in the era of globalization and free market. In acquiring skills, it must be done through vocational education. Vocational education and training is available from high school to college. But statistics of 2016 shows graduates of Vocational Middle School has an unemployment rate of 9.84%. This value is higher than unemployed high school graduates 6.95%, junior 5.76%, and elementary school 3.44% [2]. This situation is certainly not good for a nation that competes in the ASEAN economic community. The number of highly educated workers who work as much as 14.57 million (12.24%) of 118.41 million people working, and as many as 787,000 (11.19%) of 7.03 million unemployed people [3]. It is also a big problem for college in Indonesia, where many of their graduates are unemployed.

Many things affect the competence and career of graduates in the world of work. The first step to be considered is the process of determining the majors. At vocational school the process of direct admission continues to the process of majors. The early majors confuse the students because many junior students choose majors based on interests, not on the basis of competence. The determination of the majors made so far has many weaknesses, only based on the wishes of students without looking at the profile of academic value [4]. Research [5] said that by choosing the right academic discipline and strong motivation affect the achievement of a relevant career. Improper misappropriation may be detrimental to students and their careers in the future. Because by choosing the right majors are expected to maximize the potential, talent or individual talents, so as to maximize its academic value [4]. The selection of vocational majors in general has increased, which is a significant factor for people entering the workforce and based on statistical data of the number who took vocational programs based on gender in 1992-1993 male: 3.2% and Female: 1.3% whereas in 1999-2000 with male: 3.3% and Female: 1.6 [6].

One of the factors of student failure in the academic field is because the chosen majors are not in accordance with the interests and abilities of the students. Tendency Prospective students to register for following trends or coercion of parents who have a negative impact on student achievement [7]. Prospective new students require election or course selection appropriate to their interests and abilities, not just on the recommendation of friends or family who may have different interests and talents [7]. The purpose of this research is to help students in choosing majors not in accordance with the wishes, but in accordance with its competence with the help of a tool.

In the process of improving student skills, vocational education holds an apprenticeship program. The

apprenticeship program is one of the solutions to provide students with experience to work within a certain time in the industry. It is necessary to develop modern apprenticeship concept with the form of relationship of four components namely enterprises, goverment, industry and society which have different rules and connected in an environment that can provide important guarantee for vocational education and training [8]. Knowledge gained while learning is applied in the industry, it provides students with experience for their career success. Industrial world has opened opportunities for students who do apprenticeships, so the apprenticeship experience can add insight and knowledge of students [9]. But sometimes apprenticeship do not run as expected, students do apprenticeships that are not in accordance with the field of competence [9]. This situation has an impact on the decreasing of students' motivation during the apprenticeship, so that the apprenticeship is not working maximally. Research has been done which states that apprenticeship and work motivation is very significant with the readiness of students' work [9].

The apprenticeship program is undertaken in an effort to improve the competence, experience, as well as train students soft skills both in school and college. The need for a structured subject-dependent curriculum to guide teachers and learners is obvious, and fortunately there is such a curriculum [10]. In addition to gaining knowledge in schools and college, students are expected to have knowledge in meeting the demands of the working world [11]. The still high number of unemployment is caused by several factors such as lack of employment, low economic ability, and unsuitable competence of graduates with the needs of the industrial world. In overcoming the skill gaps from job seekers it is related to the issue of quality and relevance of educational outcomes.

Vocational education world, faced with the problem of how to produce graduates with qualifications relevant to the needs of the workplace so that the rate of absorption of graduates in the workplace increased [12]. A highly motivated student is reflected in the experience at the time of apprenticeship and provides experiences directly in the field but aims to make students better prepared for entry into the real world of work [13]. With work motivation and apprenticeship experience, in the information age of schools and campuses need to establish cooperation with the stakeholders so as to facilitate students in finding work information. It needs an efficient, interactive collaborative technology approach in terms of apprenticeships, training, and learning [14]. The apprenticeship program is not just for training in getting vocational skills but is a process for lifelong learning for life [15].

The purpose of this research is to help give recommendations of students who will follow the apprenticeship to choose the apprenticeship place in accordance with their competence with the help of tools so as to increase the motivation of work in the industrial world that produces competent, competitive graduates and become a reliable workforce, ready to compete in National and International levels. Competency has three main components such as knowledge, skills, and attitudes. These three things can be the basis for measuring the competence of students who will follow the apprenticeship. So that students who follow the apprenticeship is not based on interest only but also based on ability. In this research the innovation used is a hybrid system. Hybrid system that is meant here is the integration of Information Systems Selection of Departments for the selection process of majors when admissions and Artificial Intelligence in the process of recommendation of determining the location of internship for students who will follow the internship. Core of Information System is adopted from Test of Inventory Personal Survey which produces recommendation of majors according to student's interest and ability which is divided into six elements such as RIASEC.

After students enter and follow the learning process, it will increasingly improve their skills, increasing skills will improve student competence. In entering the final semester, students are required to follow industry practice (apprenticeship). In the process of determining the location of the internship, students experience confusion. By developing an AI-based apprenticeship recommendation system, it can be a solution to provide internships based on student competency. Why should I use AI? Of course this time, it is the Big Data trend so that student apprentices' previous data can be filtered and used in providing apprenticeship recommendations. Variables used in this AI system is the value of the course, GPA, and the latest test results using the Test Personal Inventory Survey so that the expected results are more valid because it has cognitive, affective, and psychomotor elements.

II. METHODOLOGY

2. 1 *Participant*

The respondents involved in the research came from two different levels. The first level is the new student who will follow the selection to get the majors. Students take the test to choose the majors they want based on their competencies. In the early stages, participants fill out their personal profile and the department they want. Then the second respondent is the student who will do apprenticeship to the company and office. The respondents involved in this test are three diploma students who are in the final five semesters. Students fill out forms with identities and items used for the process. This research involves schools and vocational college to ensure that input data coming from the vocational school level has been selected, and students who will follow the apprenticeship to produce graduates with good skills and readiness to work.

2. 2 *Data Collection*

Data collection process is done by several stages. At the stage of majors, data required is the identity of students and departments desired. Then the students will follow a kind of placement test that was adopted from Inventory Personal Survey (IPS) developed by Holland. IPS has six components: realistic, investigative, artistic, social, enterprising, and conventional (RIASEC). These six components are contained in four indicators, among others [16]:

1. Interest and involvement in an activity.
2. Self-perception of the ability to do a field / expertise.
3. Interest and interests in certain occupations or occupations.

4. Self-assessment to be able to work on certain areas of expertise.

Assessment in IPS for indicators 1-3 using Guttman scale model is firmly "Yes" or "No" and While the 4th indicator uses differential semantic scale model (SD) using score with range (1-7). The test was done within a pre-determine time duration of 10-15 minutes. The test results will show the first, second, and third largest values of the six components (RIASEC) that will determine the recommendation result of the system of majors and the results can be discussed further with the counseling experts at the school / college.

In the apprenticeship process, the data needed to measure competence are knowledge, psychomotor, and affective (KPA) from the students who will be apprentices. The knowledge value can use the GPA or the last report card value. Psychomotor value is the value of subjects / subjects that are very influential on the profile of graduate school / college. Then the last is the affective value that can use the value of personality related to the competence of RIASEC in IPS. The KPA scores will be processed and classified by artificial intelligence (AI) that can result in recommendation of an apprenticeship location in accordance with student competence.

2. 3 *Data Analysis*

Based on the data already collected in the field, next will be held analysis related to missing value which will cause the process of classification error during training data. When IPS tests are conducted, the results of the tests obtained by the students are recorded and the results are immediately discussed with the counselor. If there is a deviation on the results during the IPS test, it will be retested to get the results of the appropriate test the maximum test is done up to three times. Then the apprenticeship system for KPA data has a range of different values so that when the training process, normalization process data must be done. This process can help speed up the process of training data, so that data can be recognized well by the system. If the training process runs smoothly, then it will produce good results during the testing process.

2. 4 *Architecture of System Majors*

The major process uses six components of the IPS which are then summed in total per component. The results of the total number of the six components are then sorted by ascending (largest to small value) which is the 1st (primary), 2nd largest (secondary), and 3rd largest (tertiary). Indicator 1-4 has some questions that students must answer. The four indicators containing the RIASEC elements each have scores obtained from the "Yes" answer on each question that must be answered. The three largest values of the four indicators containing the RIASEC score will be taken and then sorted into the primary, secondary, and tertiary scores. Based on primary, secondary, and tertiary values, it will be used to determine which majors are suitable for students. Furthermore, students will be given a choice of suitable majors based on the test results, and then the committee can announce the test results whether the desired student majors are appropriate or not. The architecture of the majors can be seen in Figure 1.

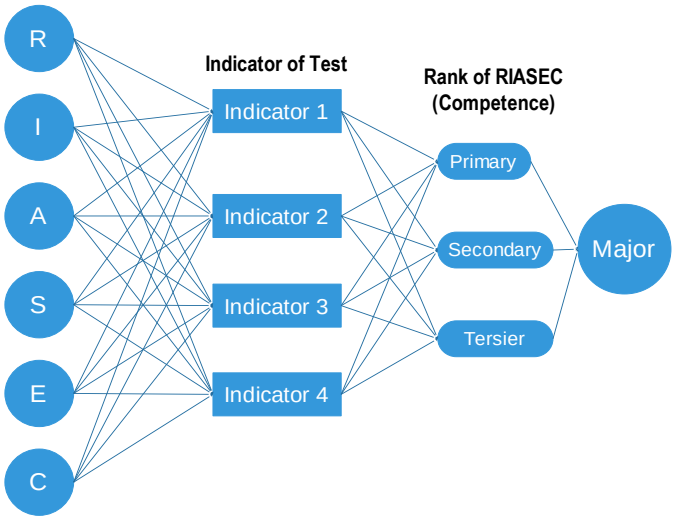


Fig. 1. Architecture of System Majors

2. 5 *Architecture of Apprenticeship System*

In facilitating the understanding of the processes occurring from the apprenticeship system, it can be illustrated as Figure 2. Based on theory, someone who is said to be competent must master the three components such as knowledge, psychomotor, and affective. These three components must be absolute and measurable to be used in the system. The knowledge of the school students in following all the lessons is seen from the last report result, while the collage of this knowledge can be seen from the last GPA score. Then to measure psychomotor actually already appears when students follow the lessons in the classroom or in the laboratory.

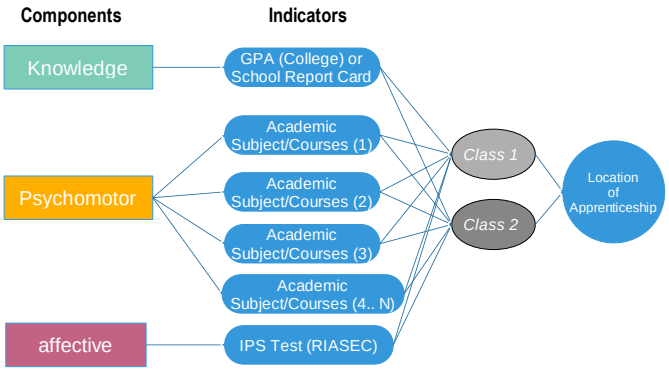


Fig. 2. Architecture of Apprenticeship System

If students follow the lessons seriously, the results obtained will certainly not disappoint. However, it should be noted that the value used here is derived from subjects or courses that play a dominant role against the graduate profile

of their respective vocational majors. Suppose the department has a graduate profile as a programmer, certainly courses that can be represented are algorithms and programming because these subjects much influence the potential and skills of students in the world of programming. If the graduate profile in multimedia, of course the value that can be represented are multimedia or multimedia introduction.

Then in the process of determining affective score, it is a little bit difficult if it is changed into a score. But with IPS, a person's competence can be measured based on his personality. This test has been widely adopted in the world to determine career success, position placement, and to find a suitable working environment. All indicators used like Figure 2 are processed and then carried out the training process. The training process will produce two outputs, which are binary numbers divided into classes 1 and class 2. These two classes will represent the existing apprentices in which category.

III. RESULT

This research has resulted in an alternative solution to provide students with choices in vocational education so that schools and colleges can make effective majors from the initial process of admission. By accepting students who take the appropriate majors, it will provide comfort in the learning process. Through the process of learning and training in skills will improve student competence. After entering the final semester, with the knowledge and skills that have been learned, then the student is ready to enter the world of work through an apprenticeship.

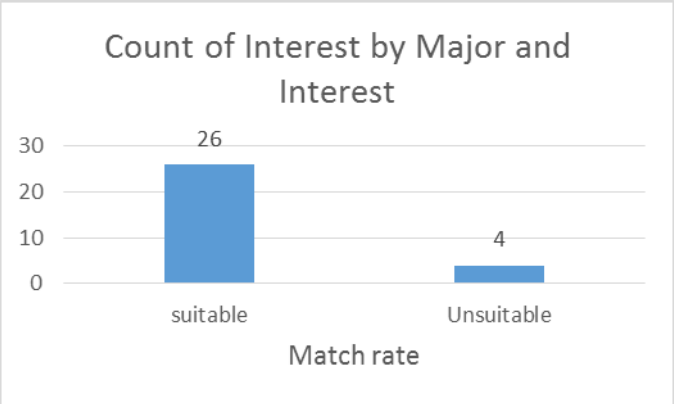


Fig. 3. Match Rate between Majors and Interests

Recommendations location apprenticeship aim to provide working comfort, motivation for students in apprenticeship. The system only helps make recommendations in accordance with the location of the apprenticeship student competence according to the apprenticeship that has been done before. The success of apprenticeship in the industrial world remains entirely determined by the students themselves, because there are many factors that influence the success in apprenticeship programs.

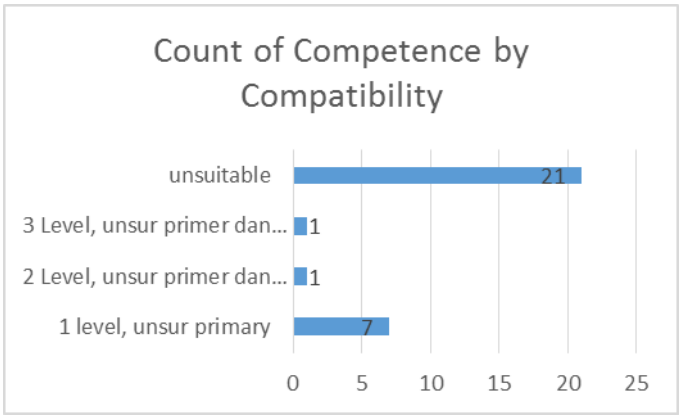


Fig. 4. Match Rate between the Majors with Competence

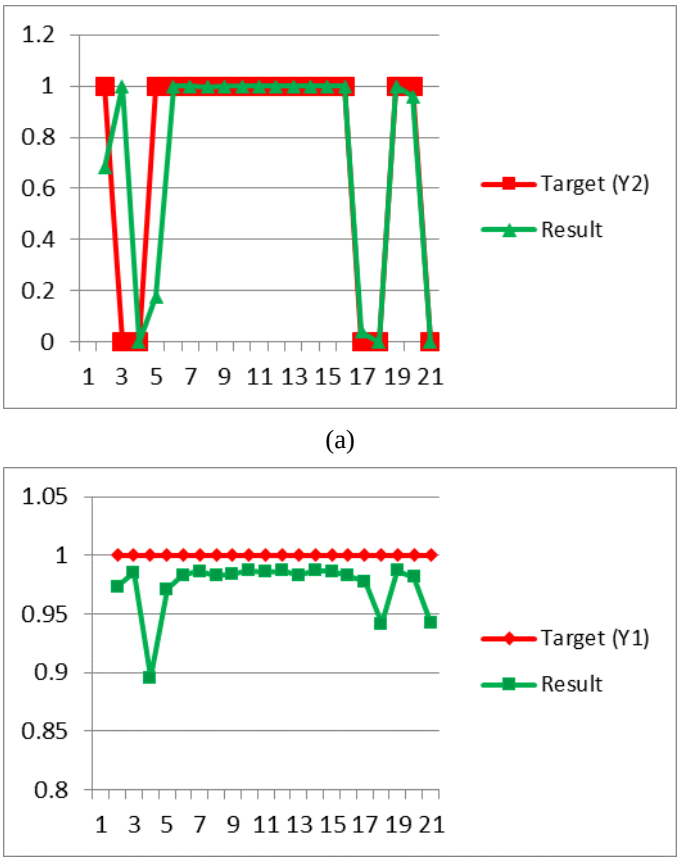


Fig. 5. Difference of Result with Target Class1 (Y1) and Class1 (Y2) Based on Fig. 2

The Collecting of preliminary data on the selection of majors is done by spreading the questionnaire to 30 students related to the chosen majors and the majors that students are interested in SMK N 3 Singaraja. This result can be used as an illustration in the development of Department of Information Election Information System. There is a graph of interest conformity with the student's chosen majors such as Figure 3.

Based on Figure 3, it shows the degree of conformity between the interests of students with the chosen majors. Information Systems being developed serve as filter between the interests of students' abilities to the chosen majors, so students do not choose the wrong majors. It is in accordance to the data between the majors selected, many are inconsistent with student competence in the graphs such as Figure 4, which indicates that many students are taking a major that is incompatible with their competence.

Then in the case of apprentices, students are faced with the choice of apprentice location appropriately. With the data training of 88 data that have been normalized, it will produce the appropriate weight to provide internship recommendations in accordance with student competence. In the training process, the required data is 75% of the overall data. After the training process, to test the ability of the system, we can use the data testing of 25% of the overall data. After undergoing the training and testing process, the system is ready to be tested with new data that has never been recognized. The system can provide the best results, can be affected by some things like missing value, data variation, and amount of data used. The result of the data testing process is that there is a gap between real results and targets such as Figure 5a and 5b. These figures explain that the difference between real and targeted data is not too far away, so the system is ready for testing with new data.

IV. DISCUSSION

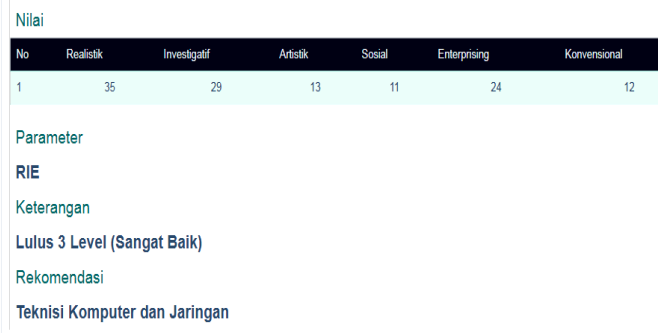
The major recommendation process helps schools in directing new students who will choose majors. Mistakes in choosing a course will result in very bad because students cannot maximally follow the lesson. It also affects the career of the students while working after graduation later. Based on this, the recommendation system becomes a solution to lead the students to the right direction in accordance with the wishes and abilities of students. In research conducted [7] Using the Naïve Bayes method to assist the classification process in determining recommendations for students and research [4] Using the C4.5 and K-Means methods, this is very different from the ongoing research because it uses a more personal approach method that is IPS by giving questions to the students related to their habits, the things they like. So that when answering, they do not know that the actual test results that come out show their potential to follow the majors and develop the skills maximally.

Constraints in this study were the students are not serious in completing the questionnaire so that the test system can be made online, with pretest. Then after student test scores are obtained and not worth, it will be given up to twice the tolerance test. If the results do not match up to then, the last alternative is a return to interest selected.

In addition to the recommendation process majors, this research also provides apprenticeship locations in accordance with the recommendation of student competence. By recommending appropriate apprenticeship location, students will maximally develop their own skills in the industrialized world. There is a recommendation system developed with adaptive methods of using social media to develop individual skills [17]. Research on the use of online forums to develop student skills in apprenticeships [18], then to support the competency of the apprentice participants is done by developing a Portal [10]. Some research that had been done was focusing on the supervision, learning, and skills development of students during the apprenticeship. Meanwhile, the current research is focusing on choosing the right apprenticeship location to develop students potential and skills while apprenticing.

V. CONCLUSION

The recommendation system developed for election majors and apprenticeship selection has a significant effect on the selection process of students to direct to the appropriate apprenticeships based on competence. In relevance that competent students will have excellent career opportunities, good job readiness, and good career expectations after graduated. This system needs to get feedback from the reader to improve their performance during the process of issuing a recommendation and solution. If the results on the first stage tests do not match the competence of the interest the student wants. System can choose three different interests when applying for majors. Test results at the beginning will be matched with the student's first interest, if is not suitable, it will be matched with second interest and so on. The results of tests that match the student's interest can be seen in Figure 6.


Nilai

No	Realistik	Investigatif	Artistik	Sosial	Enterprising	Konvensional
1	35	29	13	11	24	12

Parameter

RIE

Keterangan

Lulus 3 Level (Sangat Baik)

Rekomendasi

Teknisi Komputer dan Jaringan

Fig.6. Test Results

By using the tools, it is shown to be having a significant impact on vocational education because it is the foundation to train and improve the skills of human resources that are the most important asset in developing a nation. In case apprentice, IPS method, GPA, and courses scores are used for recommendation process in major that is supported by AI such as Artificial Neural Network for classification process. This system has been able to give recommendation of location of apprentice. The output of the classification process has 2 classes in binary form namely class 1 (Y1) and class 2 (Y2). Test results during the data testing process, the outputs of the system with the desired target, have a range close to the target. According to Figure 7, based on 80% of the training data that are already assigned to the internship location

recommendation system, when test with 20 data, 90% of the data, can be well recognized and 10% of the data have a range of value that is somewhat far away with the desired output so that the system can be feasible for the apprentice location classification process. Both recommendation systems strongly support government programs that want to produce demand driven graduates and need to be integrated further in vocational school.

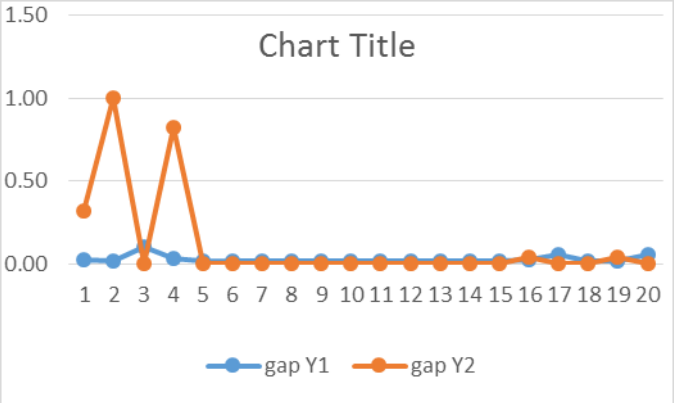


Fig.7. Gap from Testing Data

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Developing School Management Model Based on Balinese Local Wisdom

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***Abstract*— The multidimensional disharmony, such as various kinds of violence still occur in our schools today. The subjects were not only students but also teachers, principals, employees, even parents. Several approaches have been tried to solve this problem. A legal approach such as Permendikbud 82/2015 had been issued by the Indonesian Minister of Education and Culture to regulate the prevention and countermeasures of violence in education. It had even been also proposed for schools to create a violence prevention task force. From all of these approaches, neither holistic, systemic, and systematic approach based on comprehensive pedagogical foundations, nor strong local wisdom concept has been adopted in school management practices. The purpose of this article is to describe a school management model based on balinese local wisdom and culture in order to build character, culture, and harmony in the school. Some principles and concepts of balinese local wisdom and culture was proposed to serve as the foundation of school management model.**

Keywords—School Based Management, School Culture, Character, Local Wisdom, Balinese Culture

I. INTRODUCTION

Violence in schools involves not only students but also teachers, employees, even parents. The recent facts in Indonesia, around April-May 2016 show that there has been or has just been uncovered dozens of cases of violence, such as sexual violence that involved school children. Often shown on television shows, as well as news in print and online newspapers, about violence perpetrated by schoolchildren, ranging from cheating, brawls, and even other brutal actions. This is very far from the goal of the Indonesian education that is to build a complete intelligent man, pious and noble character.

This is, in fact, not a new phenomenon. Based on the results of research conducted by UNICEF [1] in several regions in Indonesia showed that about 80% of the violence that occurs in students were done by teachers. The examples of violence were throwing students with erasers and rulers, drying students in the field, and steaming students and so forth. In addition, students also experienced psychological violence in the form of scolding and insulting words. Cases of violence like these does not represent the role of a teacher as an educator or representation of parents in the school. Unfortunately, many teachers in Indonesia still believe that such kind of action is still effective to control students [2]. This can lead to psychological trauma or students will hold a grudge, increasingly immune to punishment, and tend to vent anger and aggression against other students who are considered weak. This negative circle, if continues, may perpetuate a culture of violence in society.

Schools, in this case, must take responsibility and stand at the forefront to control this social phenomenon. Strategic steps must be taken, from the strategy of the managerial system, the curricular and non-curricular systems, which are based on a comprehensive pedagogical concept that matures human beings. Of course, the school is not alone in handling this matter. At least, there are three parties which have important roles to grow children, School, Family and Society, Three centers of Educacion, Ki Hajar Dewantara [3]. In addition to school, the family should also have an active role. The family is the main place for children's education, after the school. Children will first get good or bad behavioral input from the family. If the family provides poor input, then the child tends to be less good as well. Conversely, if the family provides good education then the child will tend to be good too.

In addition to schools and families, the community also plays a huge role. What children get in the family and at school will be tested, compared, and modified, even changed, when they are in the community. The development of civilization and culture, especially since the rapid development of science and technology, has a lot of influence on the order of life of mankind. Some of this influence, of course, may be positive, and many are also negative. Family daily life too have been much changed. This change is often far from the true family values. In the current state of modernization and globalization, many people believe that people's lives, especially the life of the younger generation, are very worrying. All of this can take root and start from living conditions within the family itself. Therefore, early childhood coaching and education in the family is a very basic one. Here, the toughness of the family in filtering out the effects of both negative and positive is necessary. The school is the right environment to insert educational goals. Very relevant to the teachings of Ki Hajar Dewantara, education is an effort to promote the mind and body of children, in order to achieve perfection of life. Children' life must be in harmony with nature and society. While the Educational Law Number 20 Year 2003 [4] understands education as a conscious and planned effort to create an atmosphere of teaching and

learning process, so that learners actively develop their potential, have spiritual strength, self-control, personality, intelligence, noble character, and skills needed by society, nation, and state.

Several approaches have been attempted to solve this problem, starting with the legal approach as issued by the Education and Culture Ministry through Permendikbud 82/2015 [5] on the prevention and countermeasures of violence in the school. It is also proposed to schools creating a violence prevention task force. From all of these approaches, neither holistic, systemic and systematic approach based on comprehensive pedagogical foundations, nor strong local wisdom concept has been adopted in school management practices. Balinese Local wisdom (BLW) should be applied as a strong foundation to build human character and noble virtuous character. This seems to be acceptable in general because BLW has been proven to be applied by family and people of Bali since hereditary, although it cannot be separated from the changes and influences of the global age.

But what kind of BLW, and how far this BLW really can be applied in the context of school management, what its concrete contribution is, there seems to be no adequate literature and study on this matter. To date, no specific discourse has been discussed in the context of Modern School Management, yet no school has ever dared to declare itself in its vision as a school based on the BLW. This article will discuss (1) how to integrate the BLW with the concept of Modern School Management, (2) which types of BLW can be used as a foundation for developing a BLW- based School Management Model. This article is expected to give scientific contribution in developing school management based on the local wisdom of Bali that own a good and harmonious character as the main principle. That is a school as a place for honesty, tolerance, respect for differences, love for the environment, discipline, hard work, curiosity, and admiration.

II. STUDY LITERATURE

A. Management and Organizational Culture According to Western Theory

According to western theory perspectives, organizational culture refers to the norms of behavior, assumption, and belief of an organization. While organizational climate refers to the perceptions of people in organizations that reflect these norms, assumptions and beliefs. Creemers [6] states that "organizational culture is a pattern of beliefs and expectation shared by the organization's members". Also, Reynolds [7] state that organizational culture is the process of socializing members of the organization to develop perceptions, values, and beliefs towards the organization. On the other hand, Greenberg and Baron (1995 in [8]) emphasizes organizational culture as a cognitive framework containing the attitudes, values, behavioral norms and expectations of members of the organization. Organizational culture includes beliefs, ideologies, languages, rituals, and myths. Finally, Creemers [6] concludes that organizational culture is the overall norms, values, beliefs, and assumptions held by members of the organization.

Based on the above explanation, it can be concluded that organizational culture is concerned with beliefs, assumptions, values, norms of behavior, ideology, attitudes, habits, and expectations held by the organization (in this case including private university organizations). Organizational culture is the organizational personality that affects the way individuals act in organizations. The function of organizational culture is: 1) giving a sense of identity to the members of the organization, 2) generating commitment to the mission of the organization, 3) guiding and establishing the standards of behavior of members of the organization and 4) improving the stability of social systems[6].

However, the components of Organizational Culture (School) can be described some of the following views:

a) Ebadollah [9] who cited the views of Deal and Kennedy (1990) puts forward the following key organizational attributes: 1) the values of shared beliefs and the philosophy of their members, 2) exemplary modeling heroes, members of organizations with the best personalities and strong cultural values Organizations, 3) rituals that are symbolic ceremonies to celebrate and strengthen the interpretation of organizational values, 4) cultural communication networks ie the channels of interaction used to introduce members to organizational culture.

b) Greenberg and Baron (1995, in [8]) suggest four characteristics of organizational culture: quality (everyone is responsible for achieving quality), responsibility (each employee is responsible for his actions and decisions), togetherness (creating situations where everyone can connect), efficiency (Organizational sustainability efficiently), and freedom (giving employees the opportunity to design their future).

c) Robbins [10] presents seven characteristics of organizational culture: 1) individual autonomy, namely the degree of freedom, responsibility and individual opportunity to take initiative in the organization, 2) the structure that is the level of regulation and accuracy used to control employee behavior, 3) support, i.e. the level of help and friendliness of managers to employees, 4) the identity of the member's familiarity with the organization as a whole, especially the information of the working group and its professional expertise, 5) performance prizes, namely the level of prize allocation based on employee performance criteria, 6) conflict tolerance, i.e. levels of conflict in peer relations and willingness to be honest and open to differences, and 7) risk tolerance, i.e. the level of encouragement of

employees to aggressive,innovative and dare to bear the risk.

d) Hill, Ottem and DeRoche [11] present four characteristics of an effective organizational culture as follows: 1) structure and command, 2) support for social interaction, 3) support for intellectual or learning activities and 4) strong commitment to the mission and vision of the organization.

Based on some of the above views, it can be concluded that there are twelve characteristics of organizational culture, namely hero values, organization / exemplary, responsibility, togetherness/intimacy, individual autonomy, rules/norms, support, identity, reward performance, Risk tolerance and symbolic ceremonies.

B. Relationship Between Leadership Style, Organizational Culture, Organizational Climate and Organizational Effectiveness

The relationship between leadership style, organizational culture, organizational climate and organizational effectivenes has been explained by several authors, as follows:

a) Deshpande and Webster [12] state in relation to organizational effectiveness, there are several views and research results underlying this study. The beliefs and assumptions in the organization constitute organizational structures and processes, and affect attitudes, commitments and performance (Beliefs and assumptions are part of the organizational culture.) It can therefore be concluded that organizational culture affects organizational effectiveness.

b) Jamal [13] found that it is determined that principals with a moral value system lean more towards a transformational leadership style and principals with a pragmatic value system lean more towards a transactional leadership style.

c) Cheng [14] revealed that difference in organizational culture can be reflected at least in three overt levels: (1) organizational level in terms of principal's leadership behaviors, organizational formalization and participation, and teachers' social norms; (2) teachers' attitudinal level in terms of organizational commitment, social job satisfaction, intrinsic job satisfaction, and influence job satisfaction; and (3) school effectiveness level in terms of perceived overall organizational effectiveness and academic achievements in public examinations.

Based on the results of the research presented above, it can be concluded that organizational culture affects the effectiveness of the organization, including when viewed from the point of effectiveness of the organization process. Leadership style convincingly affects the culture of the group or organization. If the leader keeps distance with subordinates, then this attitude has a negative impact on the organization. Organizational culture is a consequence of transformational leadership. The essential function of leadership is to manipulate culture. Thus the role of the leader is very important in creating a strong organizational culture. A strong organizational culture is associated with strong leadership, participatory organizational structure, and positive social interaction. The behavior and attitude of managers or leaders influenced national culture. The organizational culture has a powerful influence on organizational climate development. Further explained that the organizational culture affects the attitude and feeling of self-belonging of the organization member. The view is reinforced by Kraft, Marinell and Yee [15] whose research suggest that to systematically improve student performance, school and district leaders need robust evidence about the strengths and weaknesses of both individual teachers and the school organization and culture as a whole. Equipped with this data, policymakers and practitioners can take steps to address individual as well as organizational strengths and deficiencies.

III. DISCUSSION

A. Contex of the Discourse

Since the last few decades, Indonesia has undergone reforms in all areas, including the reform of the National Education System. Some of the most prominent reforms were (a) the recognition of education as a national system (Law No. 20 of 2003 on National Education System), (b) recognition of professional and certified teacher (Law No. 14 the year 2005 on Teacher and Lecturer), (c)) Autonomy of Education (including 20% Education Financing Policy), and so on. But there are still many problems that need hard work to solve. One of the major issues in the field of management, in particular, is education management models, including school management. The most important quality of education issues include not only curriculum, learning process, evaluation, textbooks, teacher quality, facilities, but also management it self. Some very critical problems in the management field include (a) lacking in the education arrangements, (b) unclear in the education autonomy strategy, (c) slow and long bureaucracy, and (b) weak transparency of management.

During the new era of Suharto (1966-1998), the Education Management System in Indonesia had a very wide meaning. Education progress at that time, received recognition from around the world, especially the successful implementation of 12-year basic education. But in the midst of success, there were still many problems to be resolved, such as unemployed educated people, which were also the result of the education system. On the one hand, education resulted in a large number of higher education graduates, but on the other hand, unemployment is also increasing. As explained by H.A.R Tilaar, that in the education system at least contains the cost factors, managers, institutions, and management system. The educational management system in the Suharto's era was too

centralistic and bureaucratic, so the space for innovation was very limited. Similarly, the creativity of the educators was almost lost. This is because everything has been fully regulated and determined by the central government.

In the reformation era (since 1998-now), it began to emerge School Based Management (SBM) along with the rolling of regional autonomy. The concept of SBM was a great strategy to achieve effective and efficient school management. This SBM model is an idea where the decision-making power related to education is placed in the closest place to the teaching-learning process, i.e. the school. This concept is based on "Self Determination Theory" which states, among others, that schools have the power to make their own decisions. The Implementation of SBM brings a polarizing effect, such as the emergence of exclusive schools, prominent schools, expensive schools, schools with activities that end up burdening students and parents excessively. In addition, competition between schools, competition between students, and competition between parents also occurred. Competition on the pretext of fighting for a place in the school on behalf of the overseas exclusivity, excellence, and overseas brand offered by the school. Meanwhile, students remain subjected to objects, which were the objects to be shaped into superior human beings, competent human beings, powerful human beings, etc., without giving them adequate space to grow harmoniously within the family, community, and school environment. That was the school that put forward the souls of their ancestors and their respective cultures. In this case, a school was no longer a place for complete moral and intellectual development but is torn and trapped only in a narrow intra-curricular or extra-curricular scheme. The school was no longer a place for "among and pamong " cultural values that give the character of honesty, friendship, tolerance, diversity, recognition, noble values award, but it limited to a tense competition, contest and academic competition, such as the Olympics, Academic competitions, etc. This is aggravated by the incessant information technology and social media that can be accessed easily, which becomes uncontrollable. The school is powerless against this technological advancement, nor is it capable of using it well. It let alone protecting students from a rush of technology and social media. "Protecting" means taking positive and preventing negativity. This is a real big problem because the school must be able to come to be a protective body of students. The school must be able to provide a place for students to grow completely and protect them from a negative influence.

However, it should be emphasized that theoretically, the management system found by Western Author, such as the SBM model through the Planning, Organizing, Actuating, and Control (POAC) strategy may be extraordinary, but when it is applied in Indonesia, then the results seem not satisfied.

The question arises, why the western management theory that works well and successful in the origin country, but not necessarily successful Indonesia. Is the answer related to the value and cultural factor it self? Based on this, we need to examine the factors and rules of local wisdom and culture. In this article, the significance of Balinese local wisdom in developing school management model was analyzed.

B. Adopting Balinese Local Wisdom in Developing School Management Model

School management not only covers the management aspects of 8 education standards, as mandated by SISDIKNAS Number 20/2003 [4], such as Competency Standard, Content Standard, Process Standard, Teacher Standard, Facilities Standard, Management Standard, Financing Standard and Assessment Standard, but equally important is the value system that frames the 8-standard. For example, what is the meaning of intelligent learners, and have passed national assessment standard, if, in the end, they do not have honesty, tolerance, and the spirit of love for the homeland? Similarly, what does it mean, if a teacher has complied with the national standards, but has no commitment to lifelong learning, and makes his profession a sense of honor, as a teacher who becomes a civil servant and father to all his students? There are many Indonesian valuable cultural values, which may be difficult to quantify in verbal language, but actually embodied in thoughts, words, and deeds descended into the Indonesian nation.

In this paper, the concept of Balinese Local Wisdom (BLW) will be studied and presented more explicitly. The critical question is, what kinds and to what extent can BLW be integrated into the context of developing a modern School Management Model?

BLW is part of Balinese culture and also directly related to Hinduism, certainly has its own peculiarities. Balinese culture that holds local wisdom not only in the form of thought (ratio), but also the taste, works, and art that is usually done in everyday life. The Balinese are bound by the value of Tri Kaya Parisudha ie the Three Sacred Things: Mind, Speech and Deeds. Balinese Local Wisdom is a local wisdom to be the center of the inner-born struggle for the salvation of life. It is translated in Dharma as a truth as well as a sacred mandate. So wisdom can be interpreted as a frame of action that contains self-control based on Dharma. A guide to action to bring people more peace, prosperity, and harmony in their life**.**

Mungmachon [16] formulates: "Local wisdom is the knowledge that discovered by the people through the accumulation of experiences in trials and integrated with the understanding of nature and culture". Local wisdom is dynamic by the function of created local wisdom and is connected to the global situation. The definition of local wisdom as such, at least implies some concepts, namely: (1) local wisdom is a long experience, which is precipitated, as a guide to one's behavior, (2) local wisdom can not be separated from the environment of the owner, (3) local wisdom is dynamic, flexible, open, and always adjust to the era. Such a concept also at the same time gives an idea that local wisdom is always associated with human life and the environment.

Local wisdom emerges as a guardian or shield against global change that plagues human life. Wisdom is the process and product of human culture. Wisdom is used to survive. Balinese culture has a variety of local descendants that can be classified as local wisdom. This is in line with the idea of Geertz [17]: "Local wisdom is a part of culture". Local wisdom is a cultural element that is related to human resources, the source of culture, economic, security and laws. It can be viewed as a tradition that is related with farming activities, livestock, building house, etc.

Related to the global phenomenon, the world now is filled with climate change, gap, terrorism, corruption, war, social anomaly, economy, culture and so on. In the perspective of the Balinese (Hindu), this era is called KALIYUGA, the "age of contention" characterized by the waning of spiritual life, because the world is shackled and dominated by material life.

Wilasa [18] states that "human orientation is merely pleasure and satisfying sensual or kama (desire) appetite. If that is continued then the lust is like a fire doused with gas, will grow bigger and can destroy itself". In Sarasamuscaya chapter 16 (2001) it is mentioned that: the praised is karma (deeds). In fact, what makes a person good is good, and what makes him bad is bad. A person will be good only by doing good, and someone becomes papa (suffering) for doing evil. This local wisdom can be an inspiration, for humans to return to self-worth, and concentrate on good deeds, not on phenomena that tend to be materialistic.

Here are some experts whose perspectives of BLW that can be used as a foundation in Developing School Based Management (cited from [19])

a) **Pedanda Gunung;** Balinese culture is a religious culture: It reflects Balinese religious people who gave birth to a clean, holy and pure culture inspired by religious teachings sourced from the Vedas

b) **Gunadha**, Balinese local wisdom is a part of work culture: With work culture, everything done by Balinese man based on Hinduism produces various forms of cultural products

c) **Adiputra**, Balinese local wisdom is a part of the culture of thought: The disclosure of different ways of thinking in manifesting the prostration of God. Balinese man can produce various cultural products that almost always nuance Balinese culture based on Hindu religion.

d) **Sudiatmaka**, Balinese local wisdom is a part of the rational cultural application: In addition to being dogmatic, Balinese culture is also rational, thus giving birth to the application of rational culture

e) **Sura**, Balinese local wisdom is a part of an organizational culture: To sustain the growth of Balinese culture, it takes the support from traditional Balinese organizations called desa adat (traditional villages), banjar adat (a small part of desa adat; one desa adat consist of many banjar adat), tempekan (a small group of banjar adat, one banjar adat may consist of some tempekan) and others

f) **Wiana**, Balinese local wisdom is a part of the totality of Balinese culture: Based on the Vedas as the guides of the noble conscience will realize the things are good and positive, by making sacrifices of mutual respect between professions with each other, so the conscience reflects a great culture superb. So the behavior and the result of culture and its elements, raised as the local content of Balinese culture is the totality of Balinese culture.

g) **G. Wirta**, The Balinese local wisdom is a part of the religious culture of Tri Murti: The application of the Tri Murti (Brahma, Vishnu, and Shiva) concept is meant for all cultural creation (Brahma), to be preserved (Vishnu) well in order to create harmony. At one time cultural products must be changed or replaced or destroyed (Shiva) so that all cultural products still have a usefulness for human life.

h) **H. Gorda**, Balinese local wisdom is a part of a meta culture: The meta culture (having magical appeal) needs to be nurtured and developed among professionals. This will be maintained if it is based on the clarity of religious values.

Based on the above perspective, it can be developed some concepts of BLW that are very appropriate as a foundation in Developing School Based Management, as follows:

a) **Pasraman Concept:** This word is derived from the word "dormitory" (often written and read ashram) which means the place of the learning process or education. Pasraman school emphasizes self-discipline, develops noble character and diligent nature, hardworking, lust-prohibition and fondness to help others. The ashram school describes the close relationship between teachers (acarya) with their students, as in a family. Therefore, this system is also known by the name of the education system gurukula. Students live in pasraman with teachers as family members and teachers act as students' own parents. The process of education in pasraman from the past is still ongoing until now known also with other terms namely parampara, in Java and in Bali known as padepokan or aguron-guron.

b) **Guru Concept:** The Guru (Sanskrit) comes from two words namely gu and ru. Gu stands for the word gunatitha which means not bound by material (possessions). Ru stands for the word rupavarjitha which means being able to cross (change) others from

the miserable ocean. From this sense, it can be deduced that the "teacher" is a duty or occupation that becomes obligation (geginan = Balinese language) which is done sincerely (unconditionally) to deliver or release man from misery (folly and poverty) to a happy life and prosperity.

c) **Brahmacari Concept**: It is the lifetime of every people who are used to study. Charge his/her self to spiritual maturity so that spiritual and physical maturity develops in balance and balance. When this is realized then the person will show a responsible attitude. That is, every thing he does must be accompanied by an attitude of accountability. This is an adult mental attitude. When a person is in the Brahmacari period, his heart must be more compelled to study as much as possible in accordance with the slogan "Youth is learning and struggling time". Not the youth is used only for fun and joy. As the saying goes the youths are the backbone of the nation. They should be able to make history and be able to make changes in the times. Everyone should try to get through the Brahmacari period by achieving its goals or ideals.

d) **Catur Marga concept:** It is the four ways of practicing Hinduism (Veda) in life and in society. In this case, it can be interpreted as four ways of building and applying knowledge in schools, families, and communities. Because of our state and our inner abilities are not all the same, then through this Catur Marga, we are advised to do as much as possible, according to ability.

e) **Menyama Braya Concept:** It is the ideal concept of community life in Bali as a philosophy of karma marga that comes from the cultural values and customs of Balinese people to live harmoniously. Harmony contains intimate meaning, peaceful and not hostile, likened to the life of a married couple in a harmonious and peaceful household.

f) **Ngayah Concept:** Ngayah (serve) is not a strange verb for Hindus in Bali, literally ngayah means [20]: doing a job without wages, doing volunteer activities based on encouragement to help or actively participate (1) religious-territorial obligations, especially Pura Kahyangan Tiga , (2) duties related to indigenous banjar sociocultural activities (traditional banjar). This concept is almost similar to the concept of gotong royong (mutual assistance) in the wider context of Indonesian culture.

g) **Tat Twam Asi Concept:** It is the Sanskrit sentence, literally, this phrase means "It is you" and can simply be extracted as a recognition and appreciation of diversity and tolerance.

h) **Karma Phala Concept:** It derived from Sanskrit from the vein "Kr" which means making or doing. It can be concluded that karma pala means deed or behavior. Phala which means fruit or result. Karma phala law means a rule or punishment of results in an act. It can also be interpreted as an action-related causal law, that there is no good result, without good work.

IV. CONCLUSION

In order to build a school as a place not only for developing intelligent students but also for developing cultural values that give the character of honesty, friendship, tolerance, diversity, recognition, noble values, some principles and concepts of Balinese local wisdom can be applied as a foundation of modern school management. The principles and concepts of Balinese local wisdom are part Balinese culture that rooted in Veda, the holy book of Hindu. Some of the concepts are:

a) school as pasraman, in which self-discipline, noble character, and diligent nature, hardworking, lust-prohibition and fondness to help others are emphasized.

b) students as brachmacarian, who charge his/her self to spiritual maturity so that spiritual and physical maturity develops in balance and balance.

c) Teacher as Guru (gunatitha-rupavarjitha), who has a duty or occupation that becomes obligation which is done sincerely (unconditionally) to deliver or release man from misery (folly and poverty) to a happy life and prosperity.

d) Knowledge as Catur Marga, that is four ways of building and applying knowledge in school, family, and community.

e) Attitude as ngayah, doing learning activities based on encouragement to help or actively participate.

f) To learn and to live as tat wam asi, develop the recognition and appreciation of diversity and tolerance.

g) Learning outcome as karmaphala, as an action-related causal law, that there is no good result, without good work.

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ONLINE TEACHERS COMMUNITY

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***Abstract*- Access extension and quality improvement in education is an issue that must be addressed immediately. The government makes every endeavor to do its best, but the results are not optimal because it faced several obstacles, such as geographical, social economic and local government revenue differences. One solution that has been developed is a website named online teacher community which can facilitate the process of sharing information on the instruction. This research aimed to evaluate the effectiveness of online teacher community website. The results showed that online teacher community website could act as a medium of learning for sharing information among the teachers and become an effective medium of learning for the students. This medium could build communication link among teachers not only in one district/city, but also across districts/cities and even across the provinces. In addition, the medium could be used as a medium for school' self-evaluation so the schools could compare themselves with other schools in the quality of the instruction. Such mechanisms are expected to be able to encourage the extension of access and quality improvement in education.**

***Keywords*- online teacher's community; access extension; quality improvement**

I. INTRODUCTION

National education system should have the capacity to guarantee the equal opportunity for education and then ensure the improvement of the education quality. For that reason, access extension and quality improvement in education is two of the people's demands for services in education. Indonesia is an archipelago with geography condition, regional income and population conditions which are varied, so it implies the variety of development achievements, including the development in education. Such variations need to be facilitated immediately to increase the quality as well as equity in education. The solution is offered by having cross-subsidy on the experts, fund, and facilities, but that solution is relatively difficult to be implemented. Another solution which can be implemented is by providing media that allows the exchange of information to overcome the difference on geography and economic. The media that has such function is a web portal that is equipped learning facilities to establish an online teachers' community. Information and communication technology infrastructure (internet) highly supports the media.

Online learning community is a group of learning based on common interests and a commitment for collaborative learning with virtual learning environments [1]. Online learning occurs in virtually using the computer network (the Internet), so it can be used to decrease the face to face communication. The characteristics of computer mediated communication such as context-free and free of social conventions stimulate more meaningful communication, especially for students who have face to face communication disorders. Sofos & Kostas [2] found that the involvement of the community in practical online were able to improve the ability of teachers to manage web learning that meets the standard web learning criteria. Previously, Sofos & Kostas [2] found very few sites that meet the criteria of functional, educational, and didactic learning since the teacher only understands the web as a medium of learning. So, the teachers do not integrate web on learning in the classroom, but they use it sporadically. In addition, the teachers emphasize more on the content of teaching materials and its relevance to the learning program and produce less attention to other aspects such as flexibility performance, ergonomics, or the variability in the learning mode.

Online teacher community website gives an opportunity to the students to be able to access content from multiple sites simultaneously, either in the form of text, audio, or video. The students can interact with teachers and students from a variety of ways. Students can independently regulate their earning and teachers can improve their ability to manage learning through collaboration with colleagues. Some advanced students openly state that their learning difficulties and even express questions to colleagues from other schools that they had never known. So, students have the opportunity to access material from other environments, not only from their local environment to arise their horizons. Thus, the students can learn comfortably and directly communicate with other students and teachers online.

Online teacher community gives an opportunity for teachers to develop their own teaching materials and place them on the portal. The developed teaching materials become a tendency of e-learning today because the teachers' instructional materials developments are more accurate and interesting than the experts' [3]. Teachers and students are not only becoming the users of e-learning, but also as creators and developers of e-learning materials. Web learning is reusable, so it is very beneficial for learning design process in some

parts only happen once. Re-use of learning design can be defined as the use of the whole or replacement document of the learning environment, activities, roles or methods [4].

To be able to assimilate the learning materials in e-learning, students develop a series of psychological processes such as perception, attention, comprehension, motivation, memory, and thinking. Therefore, the e-learning needs effective learning situations that can be developed by developing effective learning designs started from formulating learning objectives to formulate the learning assessment to help students' comfort learning atmosphere. As digital learning design, there are some design elements that must be fulfilled by e-learning, both visual design and pedagogical design, such as the page settings, systematic material, illustrations, and color. Pedagogically, several requirements must be coped in the design of digital learning as follows. 1) Simultaneously followed by competence development and transmission of knowledge. 2) Ability to facilitate the independent structure of the material, both for learning structured and unstructured learning. 3) Able to anticipate the development of effective thinking strategies. 4) Able to anticipate the varying levels of mental development [4].

Continuity of the material in the form of text, graphics, animation, or video helped creating the connections between concepts to form a new concept. In constructivism, the ability to create new knowledge that can be accessed and updated become a very important component. Furthermore, the ability to create a synthesis and an ability to build connections are necessary information in the technology era. The learning process is called connect learning (Steiner & Ehlers, 2010). One of the effective medium used to facilitate connect learning is web learning. Steiner & Ehlers (2010) explains that, connect learning based on connectivism, constructivism, and situational learning approach consolidate the concepts that can help to meet the learning needs of the new organized learning scenarios, learner-oriented, communicative, and social, emotional, and situational. This research developed a web portal named online teacher community that can facilitate the process of sharing information on the instruction among the teachers and becomes an effective medium of learning for students.

II. METHOD

Web portal for online teacher community already developed earlier through research development with prototyping approaches. This research aimed to evaluate the effectiveness of online teacher community by user acceptance testing approach. Online teacher community website socialized to some of the sample teachers, including a primary school teacher, junior high school teachers and high school teachers around Bali. The samples were given training materials to fill the online teacher community website. In addition, teachers who are members of the sample are also trained to carry out communication (discussion) and the exchange of learning information, particularly information uploaded to the website. At the end of the trial, the teachers involved in the trial are given questionnaire. The questionnaire indicators are software performance, ease of use or operation of the software, user interface of the software to provide guidance to the user, usability or usefulness for the user, and the ease of data exchange process.

The teachers are being sampled provide clues to some of their students to access learning information available on the online teacher community website. Finally, after a sufficient period of time, the students involved in the trial are given questionnaires. The indicators were same with the teacher's questionaires indicators like performance of the software, ease of use or operation of the software, friendliness of software to provide guidance to the user, usability or usefulness for the user, and the ease of data exchange process. But, those indicators viewed from the students' perspective as media users. The students' responses were analyzed qualitatively.

III. RESULTS AND DISCUSSION

The web portal of online teacher community can act as a medium that facilitates the cross-subsidy of learning information, whether it was done among teacher, students and between teachers and students. The characteristics of a web portal that were able to pass the limits of time and space was expected to help teachers and students to access learning materials from other schools, both in and outside the region. Teachers and students from schools that had not come forward to access the information learned from other schools that were more advanced. Teachers and students from schools that were quite advanced shared learning information to each other. Thus, teachers and students were expected to create a community of online learning to improve educational quality and equity.

Online teacher community was able to create an organization of teachers, especially teachers of subjects. The main service that was expected from this medium of sharing learning information to improve the quality of education equity. It presented some other forms of information exchange between the information in the form of video, information in the form of images, text and information. This condition could enrich the variety of learning resources. Teachers could choose from a variety of media to support learning undertaken. If the media was considered inadequate to provide the information, the teacher could choose other media to support it. On the other hand, the students could also choose a variety of media to enhance the understanding of the material.

In addition, online teacher community could facilitate connect learning. Connect learning based on connectivism,

constructivism, and situational learning approach consolidate the concepts that could help to meet the learning needs of the new organized learning scenarios, learner-oriented, communicative, and social, emotional, and situational [6].If the students were confused receive the information from the media, they could choose any other media or even the same media from different sources. In addition, the online teacher community web portal also provided sharing information directly to make comments, ask questions, or provide feedback. If teachers need specific information learning, the teacher could ask to the other teachers. As per custom prevailing in cyberspace (the Internet), another teacher who understands the material would provide answers to their capacity. The same thing would happen among the students and between students and teachers.

The online community web portal of teachers was tested through several tests, such as completion measurement by the experts of media and information technology, the implementation of tests by teacher and students and the examination of learning usage. Generally, the results of the tests were as follows. 1) The web portal online teacher community was good enough to be used as a medium for the sharing information in the form of video, images, or documents, in which the process of uploading videos, pictures or documents were simple, uncomplicated and not too technical, so it could be done by all teachers and no need for special training to them. 2) The web portal online teacher community greatly assisted teachers in learning the information exchange in which the teachers from schools can download information about the learning from teachers in schools that are more advanced. The teachers of the school were quite advanced to share information with teachers learning from schools belonging to other developed to complement each other. Thus, the best teacher community web portal to facilitate cross-fertilization between teachers. 3) Web portal online teacher community petrified students to get lessons, especially if the information study presented was varied. Students who wish to enrich or study ahead of schedule at the school will be well facilitated by the media. 4) The general public, especially the understanding of education issues strongly support the existence of this medium because through this medium they could provide input regarding the lessons or educational policy. The tendency of students in the future hang out more and more in the world of information technology, a little or a lot of the media was to make the students more focused on activities into the learning process.

Currently there were several forums that could facilitate the sharing of information for learning or education in general. The ability of these forums to reach out to the teachers and the administration was limited by geographical region. Indonesia is an archipelago with vast geographical conditions varies greatly across regions. Interregional variations also occur in the population, population distribution and regional income and income residents, so the implications for the performance variation of development, including the development of education. Media in the form of a web portal online teacher community greatly help expand the reach of communication forums. Characteristics of free web portal barriers of time and geographical distance can reach teachers from various regions. In addition, if such an existing forum more likely to work in synchronous, the online teacher community forums tend to work in asynchronous. Therefore, differences in teachers' working time is not a barrier to involve in online teacher communities.

IV. CONCLUSION

Online web portal teacher community has been successfully implemented and was decent enough to be used as a medium for the sharing information in the form of video, images, or documents. The process of uploading videos, pictures or documents could be done easily, so it did not need special training for teachers. Limited testing indicated that the web portal online teacher community greatly assisted the teachers in learning the information exchange. In addition, the online web portal teacher community provided an opportunity for teachers to introduce scientific work to other teachers and the general public, both to improve the usefulness of the activities and help prevent plagiarism.

Online web portal teacher community petrified students to get lessons, especially if the information about the study were presented vary. Students who want to enrich or study ahead of schedule at the school would be well facilitated by the media. The general public, especially the parents strongly supports the existence of an online web portal teacher community. By utilizing this medium, students are more focused activities into the learning process. Online teacher community is expected to be an organization of teachers, especially teachers of subjects. The main service that is expected from this medium is information exchange to improve the quality of education equity.

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Harmony between Chinese and Balinese Ethnics in Bali

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Abstract - This article analyzed the harmonious relations between Chinese and Balinese ethnics in Pupuan Village, Tabanan, Bali by relating the existence of the other ethnicity with the local wisdom based on the ideology of Tri Hita Karana. The data were collected through in-depth interview, observation, and documents study and were analyzed by interactive analysis model using critical social theory. The study revealed that the harmony between the two ethnicities was strongly influenced by the Tri Hita Karana concept actualized through equal social relationship, acculturation, and assimilation. Although the possibility of conflict between ethnic and religion happened, the social interaction between the two ethnics showed the cultural endurance that can be used as a prototype of diversity in Indonesia in the degradation of national values.

Keywords: Ethnicity, Harmony, Local Wisdom, Tri Hita Karana.

I. INTRODUCTION

Pupuan village is one of the old villages in Pupuan district, Tabanan, Bali. Demographically, the village has 3.265 in population with 851 families and this includes 113 Chinese [1]. Although the Chinese ethnic is a minority group, the relation between the two ethnics is harmonious. The Chinese ethnics in this village have done amalgamation marriage, which is not common in endogamy practice among the general Chinese [2]. In addition, they also do ceremonies like what Balinese ethnics do. They also have shrines which look like Hindus, such as *sanggah kemulan, pelinggih Jro Gede*, and *Taksu*. They also become members of "Desa Pakraman" in Pupuan village.

This harmonious relation was very paradoxical compared to what happened outside Bali. In some cases, Chinese ethnics got discrimination treatment which ended with physical violence [3]. This paradoxical phenomenon inspired the scholars to investigate, especially in the form of research on the Chinese ethnics in Pupuan village which still scare [4]. Today this research became important and interesting to be done since there was a symptom of national disintegration and the delicate nature of the nation's unity, which became a national issue. Moreover, this research is really important by seeing the schools where the research had been done showed that the interaction among them was very harmony. This condition should be spread out through the education system. The study of the harmonious interrelation in Pupuan was done with the focus on why the Chinese and Balinese ethnics can live side by side harmoniously.

Review of Literature

A study on Chinese ethnics with various problems they faced as Diasporas ethnic in various regions in general and in Indonesia in particular have been done by many scholars, especially in the economic areas in which they worked as merchants in urban industries [5]. Meanwhile, studies of Chinese ethnics in villages are still rare. In Bali, there were a few studies on Chinese ethnics such as [6], [7]. In addition, there were also some scholars who investigated Chinese ethnics outside Bali such as [8], [9], and [10].

The research from Griya intensively described the meaningful contribution and synergy for the dynamics of local, national as well as universal cultures civilizations [6]. The method used was descriptive qualitative method using anthropological analysis. Substantively, Griya held the opinion that the interrelation between Chinese and Balinese in Bali was extensive and intensive based on the principles of reciprocity, acculturation and tolerance. It is also explained in this work that the parallel and similar characteristics have encouraged the integration of the two ethnics in cultural aspect.

In book entitled *"Dari Tatapan Mata ke Pelaminan Sampai di Desa Pakraman: Studi tentang Hubungan Orang Bali dengan Orang Cina di Bali"* discussed the harmonious relation between Chinese ethnics in three locations, namely: Baturiti village, Carangsari village and Padangbai village [7]. This study is different from the present study in its aim and study location although both study the existence of Chinese ethnics. Apart from this, the study gave insights to the writer in understanding deeply in the multicultural life and interethnic marriages as well as their implications in interactions in the field.

Charles A. Coppel in his book entitled *"Tionghoa Indonesia Dalam Krisis*" discussed the historical background of Chinese ethnic's problems and how the problems were developed and how Chinese ethnic communities in Indonesia accommodate themselves with the difficulties of the national politics [8]. In addition, it also looks at some other things about Indonesian Chinese who were the prisoners of their

ethnic past history. According to his book, as a minority ethnic group, but a relatively rich group through unbalanced trading activities, they caused antipathy from their Indonesian competitors. Chinese are very influential in economic sector and often have agreements with the rulers. However, when anti-Chinese prejudice broke out and when a conflict of interest continued then there will be a dilemma in which if they are too intimate with the rulers that can bring about a danger for themselves when the government fell.

Coppel's work was comprehensive and it was about the emergence of some problems of the Chinese ethnics (the Chinese ethnic crisis) in Indonesia. His approach employed temporal (historical) approach, since the presence of the descendents of Chinese ethnic immigrants who spread over Indonesia (Diaspora). How the rulers have treated the Chinese ethnics since the colonial time until the post-independence period was also the subject of discussion in this work. The exposition was very different from the present study, since this present study is limited in locality and substance. However, Coppel's work was very useful for the writer, in tracing the dynamics of the life of the Chinese ethnics in Pupuan village, which was also not free from the policies to which they have been subjected since their arrival at Pupuan village, both in the pre-colonial era (kingdom era) and the post-independence era.

Poerwanto in his book entitled *"Orang Cina Khek dari Singkawang"* discussed the proposal of assimilation to overcome the Chinese ethnic problems in Indonesia, the history of Chinese ethnics in Indonesia, the relation to national assimilation and integration, the migration of the Chinese ethnics to Kalimantan since the colonial era, and the assimilation of the Chinese ethnics in Singkawang [9]. Poerwanto's work has a very clear focus in Kalimantan about the life and the history of the presence of the Chinese ethnics in Singkawang as well as the proposal made to overcome the problems of the Chinese ethics in Indonesia through assimilation.

Different from that, this study was substantively limited to the locality aspect, in which it was done only in a village in the hinterland, that is, Pupuan village. However, Poerwanto's work helped the writer very much especially in relation to the historical tracing of the presence of the Chinese ethnics in Pupuan village especially it cannot be separated from the presence of Chinese ethnics in Indonesia in general.

Jemma Purdey in his book entitled *"Kekerasan Anti Tionghoa di Indonesia 1996-1999"* discussed the relation between Indonesian and Chinese, the minority in the middle, the spreading of dissatisfaction, the increase of anti-Chinese sentiment, climax, representing and remembering, and the change of regime and transition [10]. Purdey's work was of course different from the that the writer did, since Purdey focused more on violence suffered by Chinese ethnics done by the non-Chinese ethnics, was a reflection of disharmony, while the present study discusses an interethnic harmony between Chinese and Balinese in Pupuan village up to the time this work was conducted.

In addition to the works mentioned there are still many monumental works from scholars that discussed the presence of Chinese ethnics in Indonesia and overseas with all of the problems faced by them in foreign lands, such as [11], [12], [13], [14], [15], [16], [17]. However, the results of library search proved that there has no research discussed the subject using critical ethnography to see the relation between two different ethnics but form the relation developed a harmony. Although some works touched on and selected the same location, the studies were very positivistic and the background or the formulation of the problems was different. In addition, from the library search, it was found that there was no further discussion on the development of a harmonious relation between two ethnics with different cultural backgrounds in Pupuan village, which used cultural studies and critical ethnographical approach. This research is important to be done and the result can be used to support the character education that was being done by the government to help in succeeding the *Revolusi Mental* programmed and also to create a harmonious live in the plural civilization.

II. METHOD

This study used descriptive qualitative method with critical ethnographic approach in the Cultural Studies perspective [18]. The data were collected through in-depth interview with public figures from the two ethnics in Pupuan whom were regarded knowledgeable about the problems being studied, which included head of Pupuan village, *Bendesa Adat* (traditional custom leader) of Pupuan, chairman of Karang Semadhi Organization from the Chinese ethnics, chairman of *Sekaa Truna-Truni* (Balinese youth organization), and public figures. Direct observation was made to Pupuan village environment, the shrines of the two ethnics in Pupuan village, ceremonies, and other social activities that took place in the location of study. Meanwhile, the document's study was done by finding sources like monograph and profile of Pupuan village, and other documents in various places to strengthen the data needed. After the data were collected, they were analyzed using interactive analysis model [19] with the help from critical theory to produce a critical ethnography.

Some grand theories used were Bourdieu Practice Theory [20], [21], [22], [23], [24] which in principle said that there was capital games (economic, social, cultural, and symbolic) which also caused the development of a harmonious life. Therefore, Bourdieu's theory is important to analyzed data which were related to the reasons of why the Chinese ethnics and the local community of Pupuan can live side by side in harmony. Meanwhile, Foucault's Power/Knowledge Discourse [25], [26] in general pinpointed that power is everywhere and those who have knowledge, have power. On the basis of this theory, in relation to Pupuan village there was a power game, which caused the dynamics in the interaction of the two ethnics. Thus, Foucault's theory was also useful for analyzing data on the development of dynamics in the relation between both ethnics in Pupuan. Jurgen Habermas's theory stressed the importance of a communication to settle various problems by negotiation and dialogue by agents/actors among the interest parties to find consensus [27]. Beside these main

theories, other theories were also used such as Gramci's hegemony theory, which was also relevant and this theory was used eclectically [28]. Furthermore, the result of the data analysis which was presented descriptive-qualitatively with inductive model as the distinctive feature of Cultural Studies and was supplemented with the explanative power or critical argumentative power of Critical Social Theory.

III. Result and Discussion

Harmonious culture between Chinese and Balinese ethnics in Pupuan village, the results showed that there were various reasons that caused Chinese ethnics and Balinese ethnics in Pupuan village can live side by side in harmony. The reasons were the presence of power game and capital game played by Balinese ethnics and Chinese ethnics so that both conformed to or obey the regulations contained in *Tri Hita Karana (THK),* which was used as the guide to be done by all the local community members (*krama*) in such a way that the member felt that they were being protected and oriented toward a harmony. Similarly, the two ethnics used social capital by developing and maintaining local wisdom values about fraternity (*penyamabrayaan*) which was used as the pillar to actualize the sense of belonging, respect, tolerance that were oriented toward the development of a harmonious relation.

Social and symbolic capital game between them caused an increasingly matured and more strongly protected fraternity, through, intermarriage (amalgamation) in Pupuan village to develop an increasingly intimate tie (in groupness) and the fraternity becomes more intensive. Thus, each group tried to prevent conflicts which can occur to maintain the harmonious relation. With the use of capital game played by the two ethics to win the contests in the effort to maintain the position of each group causes them to make their best to make a balance between both of them so that the condition became balanced and this was the starting point in developing a harmonious life.

The statement above parallels to what Mr. Made Sukarya (65) who happened to have a Chinese ethnic descendent wife, who said that:

> *"Since I married Cik Etjap (his late wife) the relation with my wife's family has developed quite well. Similarly, every time there was a joy and sad event the people from my wife's family always come amidst the family who holds the feast or ritual and the reverse is also true".*

The quote from the interviewee indicated that the social capital and symbolic game between the Balinese family and the Chinese family to maintain a harmonious relation by paying a visit to each other and by helping each other when there is a feast both in happiness and sorrow to make their relation closer with each other (*penyamabrayaan*). Consequently, they try to prevent misunderstanding which can cause a rift in their relation. Hence, all parties tried to control themselves to maintain a good relation to actualize a harmonious life although they came from different ethnics.

The development of the feeling of being on the same boat due to the historical experience of the two ethnics in Pupuan village encouraged the agreement to live side by side in peace (harmony) and to commit themselves to develop the village together, since Pupuan is regarded by them as their land of birth and their belonging. Similarly, the external party's role, both the central government and the local government cannot be ignored, since they have interest in developing peace (harmony) in the society so that some regulations were issued such as Local Government Regulation No. 3/2001 on *Desa Pakraman* with the hope that social law and order (harmony) can be developed in the society. Education also has an important role to create the harmonious in this village [29]. It was proved by the tolerance among the students who have different ethnics and they can work together and also respecting each other.

IV. Conclusion and Suggestion

In the light of the study that was conducted there were conclusions which can be made and some findings found. The development of the harmonious relation between Chinese ethnics and Balinese in Pupuan village was caused by interests, power and capital game played by both ethnics, the prioritizing of tolerance, mutual respect, and equality in diversity. Thus, the community of Pupuan village can actualize the motto *Bhinneka Tunggal Ika* (unity in diversity) and multiculturalist's doctrine in their social life. So, the harmonious life in Pupuan village, Tabanan, Bali between Chinese and Balinese ethnics can be actualized due to the presence of positive or productive power game as stated in Foucault's power/knowledge discourse theory.

Suggestions

There are several suggestions that can be used as a consideration for those who are concerned with social phenomenon in the community, as follows: (1) The research needs to be followed up for its completeness considering the limitation of the researcher in various matters by taking some extension on research location to the existence of the Chinese ethnic so it can enrich the study on ethnics as an interesting topic in cultural study; (2) The stakeholder should continuously conducting the supervision to maintain the harmonious life among community members or inter-ethnics in pluralistic and multicultural society so unity in nation and state can be realized in facing globalization era recently; (3) The teachers also hoped to create a harmonious live among the different students who have different ethnics by teaching them to tolerance and respecting the differences among them and also create the sense of belonging between the

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LEARNING WHILE HELPING: A CULTURE-BASED COOPERATIVE LEARNING MODEL FOR VOCATIONAL EDUCATION

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***Abstract*— Vocational education prioritizes learning outcomes in the form of skills, so that graduates are ready to work. The applied learning model must be carefully selected in order to produce optimal skills. This research tries to develop cooperative learning model of learning while helping type adopted from culture-based learning model. The learning model has been proven capable of producing many skilled workers in various fields, carpentry, agriculture, animal husbandry, or fisheries. The results of observations and interviews show that the learning process occurs informally during the cooperative process based on the principle of interdependence. The junior worker learns while helping a more senior worker. Senior workers also learn while helping supervisors. Thus the process takes place continuously. Once a junior worker becomes a senior worker and re-recruits junior workers. While senior workers become supervisors and accompany other senior workers. The learning model can be implemented in vocational schools by preparing workshops according to the skills they want to learn. Students learn from the lowest level of skills then gradually increase to the highest level of skill. The process of tiered coaching from senior to junior occurs continuously. Teachers act as supervisors and facilitators. This learning model more guarantees the alignment of process in the learning of skills, attitudes, and behavior, so that the competencies and character of the graduates are more integrated.**

***Keywords*—learning while helping, culture-based, vocational education**

I. INTRODUCTION

Graduates of vocational education are expected to fill existing jobs or create job opportunities to accommodate other workers. The expansion of access to education through the development of vocational education is not expected to lead to an increase in unemployed educated workers but an increase in professionals workers in accordance with the needs of employment. The function of educational system in relation to employment includes two important dimensions: (1) quantitative dimensions which includes the functioning of the education system in supplying skilled workers in accordance with the needs of available employment, and (2) the qualitative dimension concerning its function as a producer of trained personnel who will be the driving forces of development [1]. The skills of the graduates must be in accordance with the current demands of the works that take many advantage of innovation in the field of technology. Academic ability must be able to be applied to anticipate job opportunities. All of those must be based on a superior character that reflects the character of the nation. The problem is, the learning model applied to now has not been able to produce the expected skills. Therefore, through this research developed a cultural-based cooperative learning model for vocational education, named learning while helping models.

There are two theories about education when viewed from the graduates that must be produced, namely the theory of human capital and the theory of crendalism. The theory of human capital assumes that the higher the quality of education, the higher the productivity of labor, the higher the effect on the economic growth of society [1]. People who have higher education will have more income than people who have a lower education. In essence, the theory of human capital considers education as an investment, both for individuals and for society. The investment will increase skills, and therefore also increase productivity, which will directly create welfare. The underlying assumption of the human capital theory is the free market for labor [2]. Every community has a number of jobs in high skills that bring high remuneration. The workforce that fills the job is

determined by the education system, so that high-ability individuals will get the most desirable jobs.

Crendalism theorists assume that the education system should be able to open and expand the insight of the produced labor, especially in opening up new job opportunities [1]. Furthermore, it is stated that education should be able to generate manpower that is able to push the potential of society to produce products in the form of goods and services, and at the same time able to open marketing opportunities. That is, education must produce a manpower capable of expanding employment, so as not to depend on the existing employment, even otherwise able to provide employment opportunities for other workers. The theory of crendalism doubts the ability of formal education to produce skilled workers, on the contrary believes job training is a strategic medium in bridging between education with the needs of employment.

Vocational education with dual system education is a blend of the two theories above. In school, students of vocational education get productive lessons to support the skills and normative lessons to support academics. While in the industrial world students do work internships to establish skills. Thus, vocational school students get more training in skills. To date, learning models implemented in schools must be chosen wisely in order to equip learners with adequate skills. Many learning models have been developed, and many are able to provide good skills to the graduates. In addition to the optimization of skills mastery, vocational education also still requires academic education in order to develop skills later after working in the field. Furthermore, character building should be done as optimal as possible so that the graduates have good character according to the demands of the state and nation. Conditions like these require the application of learning models that can foster the competence of skills, academic competence, and character together. Indeed this is not easy, but the symbiosis between local culture-based education and modern education can produce a learning model that can integrate skills education, academic education, and character education.

Emperical data show that many skilled workers are born not through formal education. Carpenters, builders, farmers, ranchers, fishermen, even highly skilled and highly productive artists have never attended formal education. Their high-level skills are gained from informal education while working. The model of direct involvement in work is able to deliver individuals who initially lack the skills to become skilled individuals in their field. High skills should be possessed even accompanied by good academic competence, so as to develop his skills. Character owned also tends to fit the character of the teacher who educates them.

This fact inspired the contextualization of a vocational learning model based on local culture. Contextualization is interpreted as the adoption of the local culture-based learning model which in its implementation is adapted to the present condition, in order to be able to produce the needed workforce at present. One of the learning models that was tried to be developed to be applied in vocational education is cooperative learning model of learning while helping type.

II. METHOD

The research wants to develop culture-based learning model for vocational education. This research consists of three stage, this is the first stage of the research that aims to explore the cultural-based learning model. The research was conducted with qualitative approach. Data were obtained from literature review, observation, and in-depth interviews with respondents. Respondents were determined by snowball technique, where the researcher asks respondents or participants to identify others to be members of sample [3]. The sample comes from community leaders and cultural-based education actors. The data were analyzed qualitatively using Miles and Huberman method [4], where the data analysis consists of three activities: data reduction, display data, and conclusion drawing or verification.

III. RESULT AND DISCUSSION

The results of literature review, observations and in-depth interviews found that many of the skills that individuals acquired were not from formal education but from informal education through direct involvement. Skills in carpentry or agriculture for example are obtained from generation to generation through direct involvement in activities that can not be separated from cultural activities. Informal education through direct involvement in these areas occurs in a cooperative process between junior acting as a student and a senior who acts as a mentor under the supervision of an expert acting as a teacher. Students assist mentors while studying. Students begin to learn by helping their mentors in the job with the lowest level of skills. When there is an improvement in skills, then the student will learn while helping on a job with a higher level of skill. Thus the process takes place normaly, until at some point the student already becomes a middle-level worker. The cooperative process for learning while helping continues until the student becomes an expert worker. Teacher who is an expert will do the monitoring while working as well.

Most learning process takes place through giving examples or instructions. While working, mentors provide examples or clues to students. Students do what is their duty by following the example or guidance of the mentor. If there is a mistake on the students, then the mentor will straighten by working directly while giving directions. If the mentor is unable to give instructions or examples, then the teacher will step in to provide an example or direction. In this context, learning occurs not only in the student itself but also in the mentor. When all goes normally, then one day the student will become a mentor, while the mentor will be a teacher or an expert.

Coaching that occurs during the collaboration process includes process and product skills. The hope, graduates are able to produce good products through good work processes as well. Products are judged by product quality measures, while process quality is judged by speed, neatness, and efficiency in material utilization. In addition to fostering skills, the collaboration process also takes place in moral or character formation, such as honesty, openness, tenacity, courtesy, and ethics. In other words, learning and evaluation of culture-based vocational education takes place in an integrated manner, whether cognitive, affective, or behavioral. Integrated assessment of cognitive and noncognitive angles can stop the inequality of treatment between individuals [5].

If the above educational model is adopted in current vocational education, then most learning process take place in the workshop. Students work while studying in the workshop accompanied by seniors as assistants under the supervision of teachers. A senior person in addition to having adequate skills should also have good character. Students help seniors while studying, while seniors help teachers while studying as well. Another advantage gained is that students, assistants, and teachers together can produce the product. The product can be used for school or community. If the product is economically valuable, then it can be marketed to help the school finance.

Objectives to be achieved through cooperative learning type learning while helping are: (1) produce graduates who have the knowledge and skills in accordance with employment; (2) produce highly disciplined graduates who have a high work ethic, full of initiative, and creative in creating new job opportunities; And (3) gain recognition and respect for work experience as part of the educational process. The achievement of the above objectives will fulfill one of the expectations of educational reform, that is to relate education to the practical world and to give more opportunities for students to compete and to be fair, both nationally and internationally.

Such vocational education can provide an understanding that formal education can produce skilled workers. Job training considered a strategic medium to bridge education with employment needs is no longer absolutely necessary. Graduates are guaranteed to have the necessary skills of the jobs, able to work in groups, have the skills to live in their social environment, and are able to share information. Such competence can be achieved because

students experience meaningful learning through the collaboration of students, teachers, and the surrounding community in a friendly learning environment. Such learning process can lead to awareness of the students themselves to realize the learning experience on all sides.

The application of cooperative learning model type of learning by helping can be applied more optimally if vocational school is built in relevant environment. If the community is farmers, it is necessary to build a vocational school for agriculture. If the community is a fisherman, it is necessary to build a marine vocational school. The same is required to establish another vocational school. The requirement is based on the assumption that the surrounding community is an extension workshop in school. Cooperation is built between schools and partner institutions around the school. Partner institutions may be government agencies, state enterprises, private companies, cooperatives, foundations, business entities, institutions or organizations. Criteria for partner institutions include: (1) having activities and competencies relevant to the education program in the school concerned; (2) have concern and attention to the education of professionals; (3) having practicum facilities in accordance with curriculum requirements; and (4) have reliable instructors to guide student practicum.

Cooperation as above makes the students' skills more integrated. When graduated later students can devote the skills possessed in the community itself. The graduates produced are really able to move the potential of the community to produce products in the form of goods and services, and at the same time able to open marketing opportunities. They are able to expand employment, so as not to depend on the existing employment, otherwise able to provide employment opportunities for other workers. This condition at the same time is an effort of equitable development and prevent the movement of people from village to city to fight for job opportunities.

If graduates have to work for employment companies, then they are able to increase efficiency because companies no longer need to spend to do the training of labor. Complaints that the education program is not able to produce skilled labor in accordance with the needs of the labor market can be reduced. Similarly, the spotlight on weak coordination between formal education and the world of work can also be reduced. The more important thing is to prevent the increase of unemployment. It means, the expansion of learning opportunities by developing vocational school does not tend to have led to an increase in unemployed educated workers but tends to increase productive workers in accordance with employment.

One criticism of the human capital theory is to overemphasize the material dimension thus reducing the value of culture [6]. Student involvement in the surrounding environment as a workshop certainly can maintain the culture that is expected to remain owned by students. It will the phrase of Banks & Banks [7] that everything that happens in education relating to culture, wheither in terms of recognition, transformation, or creation.The alienation that can arise from excessive use of technology can be controlled by keeping in touch with each other during the collaboration process while working. Negative influence of social media technology can be eliminated as optimally as possible because students are always under the supervision of mentors and teachers. Thus the student can still do business by sticking to the basic principles of change, that is, to take advantage of the opportunities offered and avoid negative influences, due to cultural contact and the interaction between such a wide world [8].

IV. CONCLUSION

Cooperative learning model type learning by helping for vocational education has been tried to be developed. The learning model was adopted from cultural-based learning to teach skills in Indonesian society (especially Bali). Learning model has been applied from generations to generations for a long time. Despite the emphasis on learning skills, but the learning model also teaches knowledge, attitude and behavior simultaneously. Knowledge is related to the skills learned so that learners can develop the skills later. Attitudes and behaviors are fostered so that

learners have good character while interacting with their social environment, either at work or in everyday life.

Learning takes place directly in the work process. Under complete conditions, during the work process involved beginner workers, intermediate workers accompanying beginner workers, and skilled supervisory workers. The beginner worker learns from the intermediate worker while working together. They both learn from the supervisor who also while working. When all the processes are run normally, upgrade of skills will take place gradually from beginner workers to intermediate workers and eventually become skilled workers. However, abnormal conditions may also occur, in which the beginner worker is forever only able to do the job with lower-level skills.

The application of cooperative learning type while learning model in vocational school needs adequate workshop. Majority learning process takes place in the workshop. Students learn to be accompanied by seniors as assistants under teacher supervision. Learning takes place while working. In addition, the vocational school is intended to be located in the relevant environment, so that the school environment can be an extension of the school workshop. To optimize student learning experience, collaboration can be established between schools and partners, such as companies, foundations, or organizations that operate involving school-produced skills.

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EVENT BASED ASSESSMENT: A FORMATIVE ASSESSMENT OF INTEGRATED CHARACTER EDUCATION

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***Abstract*—This research tried to formulate the model of formative assessment of integrated character education in schools by adopting the assessment model of Balinese cultural events. Various events of Balinese people, either religious or social events are solved through mutual cooperative. Members of the community involved vary widely, either in terms of age, experience, or profession, so that indirectly occurs the learning process and formative assessment. The formative assessment takes place in an integrated manner covering the components of performance, attitude, and behavior. Assessment takes place without instruments and the results accumulate into a person's track record. Feedback can be clues or suggestions. Uniquely, the assessment is done by everyone to everyone involved. Senior and junior assess each other, seniors assess each other, and junior assess each other also. Feedback is used as input to improve their selves. The assessment model can be implemented in schools in the form of direct observation with inventory. Inventory includes components of performance, attitude, and behavior. Assessment results can be integrated with the portfolio, so that the assessment results are more complete and more integrated.**

***Keywords*— Assessment; Formative Assessment; Integrated Character Education**

I. INTRODUCTION

Internet, television and other mass media continually preach brawls, drug use, traffic violations, anarchic behavior, and even terror behavior. This fact worries parents and people who care about the development of the young generation. In 2011character education in schools in Indonesia was began. Minister of national education at that time mentioned that the character education is implemented from the curriculum up to build culture in school [1]. The minister added that the character who wants to be built is not just politeness, but simultaneously built characters that can grow curiosity as an authorized capital to build creativity and innovation power.

Character education is about the acquisition and strengthening of virtues (qualities), values (ideals and concepts), and the capacity to make wise choices for a well-rounded life and a thriving society [2]. Character education is not run as a separate subject, but is integrated in all subjects. In principle, the development of culture and character of the nation is not included as a subject but integrated into the subjects, self-development, and school culture [3]. Character education is integrated within the school environment, whether in the curriculum, teaching strategies, or co-curricular programs. Character education therefore requires a standard program, standardized implementation, standard curriculum, standard partner work, and standard evaluation process.

Empirical experience shows there are some problems in implementing character education in an integrated manner in all subjects in school. The most difficult problem is in evaluation, especially formative evaluation. Formative evaluation is conducted during the learning process to find out what competencies have been achieved by students and identify gaps between student competencies with standard competencies to be achieved. The information is used by the teachers to plan the next learning in an effort to improve student learning outcomes. On the other hand, the teacher should also provide feedback to the students so that students know the progress of their learning. The teacher then provides guidance on where the student should move to improve the learning process. If the student response is correct, then the feedback becomes reinforcement for the students. Conversely, if the student's response is wrong, then the feedback becomes remedial learning for the students.

The difficult problem in the implementation of formative evaluation is to get information about the progress of learning outcomes regarding the character of students. Character education learning outcomes are more about affective domains (attitude) and psychomotor (behavior), such as honesty, responsibility, appreciation, self-confidence, self-efficacy, and so on. Therefore, the

evaluation process should be able to measure affective and psychomotor domains well. On this occasion, we try to formulate the evaluation model of event-based character education. The model was adopted from evaluation model of Balinese cultural event. Although it does not appear explicitly, either on the religious or social event of the Balinese community there is always a learning process and evaluation process. Community members who engage in events vary greatly in terms of age, experience, profession and so on. Therefore, in the activity occurs the learning process from senior community members to juniors, among seniors community, and also among juniors community. This study focused on the evaluation model which is very unique because it was done by everyone to all the people involved. The evaluation model is attempted to be formulated to be applied as an integrated character education evaluation in schools.

The development of academic competence and character building are the two main goals of education in schools. These two goals cannot be separated from the preparation of children to enter the workforce, further education, lifelong education, and to be good and responsible citizens. The development of academic knowledge contributes to the improvement of student's intellectual abilities and skills. Character education helps student to form attitudes and behaviors, such as honesty, integrity, respect, responsibility, self-discipline, and self-defense. Character education creates an environment that is expected to improve the effectiveness of learning activities. The hope is that no student can finish school by mastering academic knowledge but lacking in character. Benninga et al. [4] found that schools with good quality of character education qualities tend to produce graduates with higher academic ability.

Character education is implemented in an integrated manner within the school environment, whether in the curriculum, learning strategies, or co-curricular and extra-curricular programs. Cooperation between family and community can identify and teach character values to students by example or role model while encouraging them to carry it out. Lickona [5] mentions that schools, families, churches, and other communities responsible for character education must be involved in the evaluation of character education for a common goal. In recent years, the school has the capacity to be able to carry out well and correctly character education. Teachers at school act as people, who help students to shape themselves for the better, not just help the students to improve competencies, skills, or techniques.

Students were encouraged to more appreciate the good experiences gained from the school and to avoid the unfavorable experiences gained from their group or mass media. Group habits and mass media often have a negative effect on the character of the students. Today, destructive tendency groups are growing. Similarly mass media, such as television, movies, magazines, newspapers, mobile phones or the internet often present violence, drug use, sexual behavior aberrations, theft, and academic fraud. Collaboration of internet and mobile phones even now has opened up opportunities for everyone to become a reporter. As a result, pornography, terrorist, narcotics, and so very easily spread through *facebook*, *twitter*, *instagram*, *whatsup*, and other features. Therefore, the role of teachers in schools is not limited to the application of various models to assist the transfer of information and skills to students, but to foster the development of students in their entirety.

Spears [6] mentions that the character has much to do with the essential traits exhibited by a person. Indeed, character education is focused on the affective and psychomotor domains. Hence, exemplary factors become an important component of learning while observation factors become an important component in the evaluation. It is difficult for the teacher to observe all of their student's attitude and behavior because of the limitation of time and energy. It means that it is necessary to develop character education evaluation model that able to overcome the limitations of time and energy by involving all elements of the school. One model of character education evaluation developed is that everyone evaluates everyone. This model is adopted from Balinese culture-based evaluation.

II. METHOD

This research used qualitative approach. The sample was determined by snowball technique by selecting one initial respondent then move on to the next respondent based on the data requirement and the respondent's consideration at the time. The respondents were community leaders who are accustomed to engaging in events with mutual cooperation and even once a leader in the intended events. Data were collected by in-depth interview techniques in natural settings. The data collected included evaluation components, qualification levels, recording techniques, decision-making techniques, and feedback techniques. The collected data were analyzed using qualitative data analysis model of Miles and Huberman [7], consisting of three activities namely data reduction, data presentation, and verification.

III. RESULT

The study found that assessment of cultural events in Bali included the components of work processes, performance, commitment, honesty, cooperation, caring, responsibility, tolerance, appreciation, speech, communication ethics, and behavior. This finding is similar to eleven character education criteria formulated by DeRoche & Williams [8], namely concern, cooperation, commitment, courage, change, relationship, coherence, consensus, communication, culture, and criticality. Differences occur because the assessment of character education based on Balinese culture is done in an integrated manner with performance assessment, while DeRoche & Williams formulation only contains character education criteria.

Generally, character education assessments are conducted by assessors (both teachers and other staff) to learners. Different things happened in the process of assessment of character education based on Balinese culture,

where the assessment was done to everyone by everyone present. Everyone present in cultural events have the same rights and obligations because they are all citizens. The difference only exists at the level of seniority classified by age and experience differences. Here senior assess junior, junior assess the other junior, and senior assess the other senior. Assessment is done sporadically by using qualitative measures and not explicitly using rubrics. Assessment results are only stored in memory. The result of the assessment in one event is related to the assessment of the next event, so it becomes a kind of track record. The track record poses a positive thing for this assessment model that is the appearance of a role model in Skinner terms called significant others. Another positive point derived from such an assessment model is the occurrence of some sort of sublimation effect, in which the deficiencies in one activity will try to be covered with an excess on the other. Nevertheless, this assessment model cannot be separated from the weakness, among others the effect of stereotype, namely embedding a nickname to someone because too often raises a particular word, attitude, or behavior.

The adoption of a character education assumption model above can be done by packing it into school activities, both in class and outside the classroom. During classroom learning activities, assessment can be done by teachers or other students. While for out-of-class activities, such as devotional work, prayer, or scouting, the assessment may also be performed by other school staff involved, such as employees, technicians, librarians and even principals.

The original assessment model above does not use the instrument. In order to have a standard assessment process, it is necessary to develop relevant instruments. The most relevant assessment instrument to support an integrated character education assessment above is inventory. Inventory is an evaluation instrument in the form of a number of statements with a range of scores to be selected. The scope of the inventory moves from one pole to another. For example an inventory in which contains a statement about the ordinance of communicating. The range of scores provided for example 1 to 10 like Table I, which 1 is at the ugly pole and 10 is at the well pole. The appraiser will give the scores according to the observations made. In accordance with the integrated character education components that are already found, inventory for an integrated character education assessment can be formulated as follows.

TABLE I. THE RANGE OF SCORES

Component	**Score**									
	Bad									**Good**
Work Process	1	2	3	4	5	6	7	8	9	10
Performance	1	2	3	4	5	6	7	8	9	10
Commitment	1	2	3	4	5	6	7	8	9	10
Honesty	1	2	3	4	5	6	7	8	9	10
Cooperation	1	2	3	4	5	6	7	8	9	10
Concern	1	2	3	4	5	6	7	8	9	10
Responsibility	1	2	3	4	5	6	7	8	9	10
Tolerance	1	2	3	4	5	6	7	8	9	10
Appreciation	1	2	3	4	5	6	7	8	9	10
Speech	1	2	3	4	5	6	7	8	9	10
Communication Ethics	1	2	3	4	5	6	7	8	9	10
Behavior	1	2	3	4	5	6	7	8	9	10

The majority of assessments were conducted through observation while working. A senior while doing his work conducted an assessment of the junior being supervised by observing his performance, attitude, and behavior. Direct or indirect praise was given to his juniors who performed well, be nice, or behave well. In contrast, reminders of clues, admonitions, or examples will be given when the juniors perform poor performance, mismatches in attitude or errors in behavior. Fellow senior or fellow juniors also occur assessment process. One senior conducted an assessment of another senior, as well as one junior conducted an assessment of another junior. Inter-senior or inter-junior will discuss the results of each assessment. Discussion results were used to improve themselves. The very unique thing here was that juniors also conducted assessments of their seniors. A junior conducted an assessment of his or her senior in terms of approach, communication, attitude, and behavior. It's just that a junior is sometimes reluctant to give feedback to his senior, so they convey through friends or other seniors.

Something similar can happen in an atmosphere at school. Assessment feedback on students will be easy to deliver, while assessment feedback on teachers or other school staff, both by students and fellow staffers will be more difficult to convey. This happens because the habit of hesitating to assess teachers or colleagues. This should not happen because the goal to be achieved is very

important, namely self-improvement. The approach that can be taken is not to include the name of the appraiser, then made a recap by the principal. Assessment results and feedback were conveyed by the principal through a forum, such as a coordination meeting or at a friendly event.

IV. CONCLUSION

Everyone who attends the cultural event in Bali is a citizen of the same duty, even if there is a difference of age or experience among them. Their main goal is to work together to complete the work to succeed the event that is facing. The learning process also occurs when they were working together. The more senior citizens are educating their junior, as well as those skilled in one area will educate others in the field. Indirectly, the people involved in the event conduct the assessment sporadically. Assessment is done in an integrated manner, whether it concerns performance, attitude, or behavior. The very unique thing is that assessment is done to everyone by everyone present.

When this assessment model is implemented in schools, there will be student assessments by teachers, peers, and other school staff, as well as assessments of school staff by students and by other staff colleagues. This is certainly very interesting because it gives many advantages. Assessment of students by anyone is common in an effort to improve student learning outcomes, as well as cognitive, affective, or psychomotor. Assessment of school staff by students and other staff is also very necessary. Principals, teachers, and other staff should be role models for students. Therefore, they must seek to improve themselves. In addition to self-evaluation, self-improvement can also be made on the basis of assessments by students and other staff colleagues.

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The Implementation of Big Book as Media to Teach Reading Comprehension for the Sixth Grade Students of Elementary School

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***Abstract*—Since big book becomes one kind of tools which can facilitate students' comprehension during reading stories activities conducted by teachers, this study aimed to know the implementation of Big Book in improving students' reading comprehension of the sixth-grade students. Descriptive Qualitative was used with the sixth-grade students as the subject in this study. The instruments used in this study were a video recorder, teacher's diary, and interview guide. The data were collected through observations and interviews. The result of this study showed that the implementation of Big Book was very helpful for improving students' reading comprehension.**

Keywords—big book, media, reading comprehension, young learner

I. INTRODUCTION

English is a foreign language that the students should acquire from the early age [1], [2]. Starting to learn English at the early age is good to enhance the learner skills [2]. There are four skills that students should acquire in learning English. One of them is reading. It is stated that reading becomes one of the important parts in acquiring language acquisition since most of the subject matters in the school begin with printed material or text book and most of the students' tasks are related to reading activity [3].

Furthermore, reading is an interactive process between the reader and the text [4]. The process involves the interaction of the reader with the text and constructing the meaning through various kind of knowledge. The knowledge can be the topic of the text, the main idea of the text, the grammatical structure of the language which used in the text, and also the symbol in the text. Thus, comprehension becomes the primary purpose of reading [5]. When we read, we need to understand what the writer intended to convey in writing. Moreover, reading comprehension is not as simple as reading the text and the reader can find the meaning directly. It is a process of relating previous knowledge and the information found in text in order to construct the meaning of the text [6] [7]. By relating the readers' background knowledge and the text itself, they will comprehend the text well. In reading comprehension, the students are expected to be able to recall word meanings, draw inferences about the meaning of a word in context, finding answers to questions answered explicitly or in paraphrase, and weaving ideas in the content [8] [9].

In fact, the students are still struggling to comprehend the reading text. It matched with the facts that the researcher found as the result of pre-observation and informal interview with the teacher and students in SD Laboratorium Undiksha Singaraja. Most of the students looked confused and uninterested when the teacher distributed reading text, then asked the students to read the text and answered the questions based on the text. The students said that they did not understand what the text was about. There were so many difficult words in the text. The students just wait for the teacher to explain the meaning of those words for them without any effort to check it in the dictionary. Furthermore, in answering the questions, most of the students just guess the answer because they could not grasp what the text was about. It is obvious that the students in SD Laboratorium Undiksha Singaraja encountered the difficulties in finding the main idea, specific information, word meaning, and textual reference in the text. In addition, the teacher seemed too reliant on the use of conventional media in teaching reading. It made the students feel bored and did not give the positive response in the learning activity.

Teaching reading for young learners is not easy and quite challenging. Teaching reading for young learners needs special way because young learners have special characteristics. The learners at age of 7-12 years are categorized as young learners who have some special characteristics that the teacher must consider [10]. One of the characteristics of young learners is the short attention span in which if the teacher cannot consider it well, they tend to easily get bored [10]–[12]. Young learners will lose their interest after ten minutes or so, so the teacher must be good in getting students' attention and make them not feel bored in the reading lesson. In teaching reading for young learners, the teacher needs attractive media in order to make them easy to

understand the text because using appropriate media is one of the key principles to create the effective learning process [13].

Media, in order to accomplish effective lessons, are defined as means or tools that can be used to transfer the content of the materials to the learners [14]. Additionally, by using media the learners will engage in the learning process and it can help the teacher to get the students' attention in the learning process. By using media in teaching English to young learners, the teachers can easily provide a good classroom situation [12]. A good media can attract students' attention and make the students focus on the learning process. One of the media that can be used to teach reading for young learners is a story in form of Big Book.

It is described by Hall & O'Connor that big book is a large format of printed book with texts and illustrations [16]. Big Book is kind of storybook that printed in a large version. Reading a big book is one of the activities used to facilitate students' comprehension of a story delivered by the teacher [17]. They add, the big book helps the students to learn new vocabulary and to enhance students' reading comprehension of a text. There are some benefits of using Big Book in the classroom such as Big Book creates secure and relaxed atmosphere in the classroom and attracts students' attention in the learning process, Big Book attracts young learners curiosity as well as sustains their enthusiasm, Big Book stimulates students' imagination and helps students' in understanding the story, and Big Book improves students' attention and participation in reading class [18]. Thus, the big book is a good medium to help the elementary school students in comprehending the reading text.

As mentioned in [19], in implementing the big book, there are some activities that should be conducted, they are pre-reading activity before reading the big book, reading the complete story, re-reading activity, after reading activity, and close activity. In the pre-reading activity, the teacher shows the front cover, pages, the upper part, and the bottom part of Big Book, the back cover and how to open the book in the right way. By showing the front cover, it will create a conducive to get a great discussion with the learner by giving a comment on the illustration or the picture with the word on the front cover. The teacher tells the title of the book, the writer of the big book, and the illustrator of the big book loudly. Then, they ask about the possible story of the book based on the title and the illustration on the front cover of the book. Then, in reading the complete story, the teacher read the story continuously from the first page until the last page. The teacher read the story loudly along with interesting expressions and intonation. The teacher can stop on a certain page and ask the children to guess the text in the next page or give additional information about the story or the illustration. After that, in re-reading activity, the teacher repeats the story page by page. The teacher shows the words and says it clearly. The teacher asks the comment from the children about the story and stops for a while in the certain page to give a chance to the children to memorize and guess the next words in the story. Moreover, in after reading activity, the teacher discusses the keyword in the story and helping the learner to connect one concept with another concept. Then, the teacher and children read the story together. The teacher gives stressing in the way to read and gives a correction about the way to read in a comfortable way. Last, in close activity, the teacher gives various types of interesting activities based on the area. The teacher can give guessing word game, bolding the words game, arranging the words game, completing the missing words, coloring picture, drama playing, pantomime, imitating certain character in Big Book, putting the number to the picture, storytelling, and much more based on the area.

A study on the use of big book has been conducted by Fahmi, Suhartono, & Arifin in 2013 in the fifth-grade students of SDN 32 Pontianak. This study focused on the use of the big book in improving students' reading comprehension. The result of this study showed that the use of the big book in improving students' reading comprehension can be seen in every meeting or cycles [18]. Another research has been done by Suantari in 2016 in SD Laboratorium UNDIKSHA Singaraja in developing the big book in teaching English at sixth-grade students based on the syllabus in SD Laboratorium Undiksha Singaraja. This study was Research and Development and the result of this research showed that the Big Book developed was categorized as excellent media [20]. Since it has not been implemented yet in order to know how well the implementation of the big book could help the students' reading comprehension, it is a need to continue the research in implementing that media in teaching reading for students of elementary school.

In this present study, Big Book was applied in order to know the implementation of Big Book for improving the sixth-grade students reading comprehension. This study was a descriptive qualitative study in which the purpose of this study was to know the implementation of Big Book on the sixth-grade students' reading comprehension. This study conducted in the sixth grade of elementary school students in SD Laboratorium Undiksha Singaraja in academic year 2016/2017.

II. RESEARCH METHOD

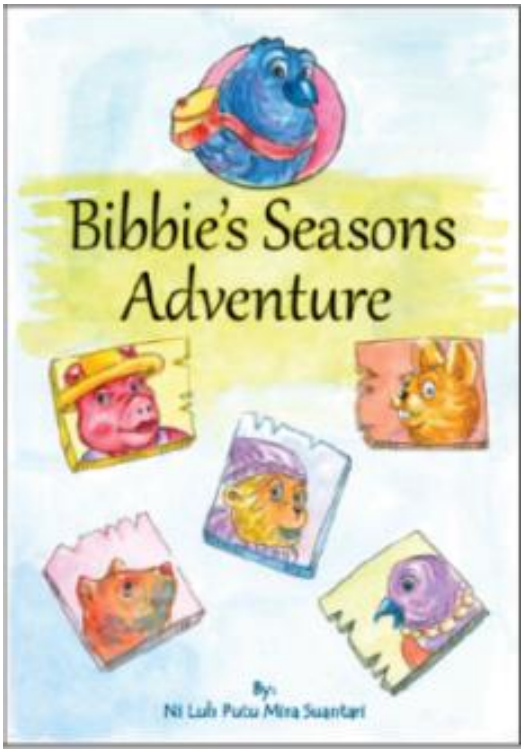
This study was descriptive qualitative Study. The subject of this study was the sixth-grade students of SD Laboratorium Undiksha Singaraja. There were two classes of the sixth-grade students of SD Laboratorium Undiksha Singaraja, and one class was used as the subject of the study that consisted of 35 students. The object of this study was big book which was used to teach reading comprehension. The instruments used in this study were video recorder and teacher's diary. The recorder was used to record all the activities during the implementation of Big Book as media while Teachers' Diary was used to monitor the result of the implementation of Big Book as media on students' reading comprehension. The data were collected through observations and interview.

III. FINDING AND DISCUSSION

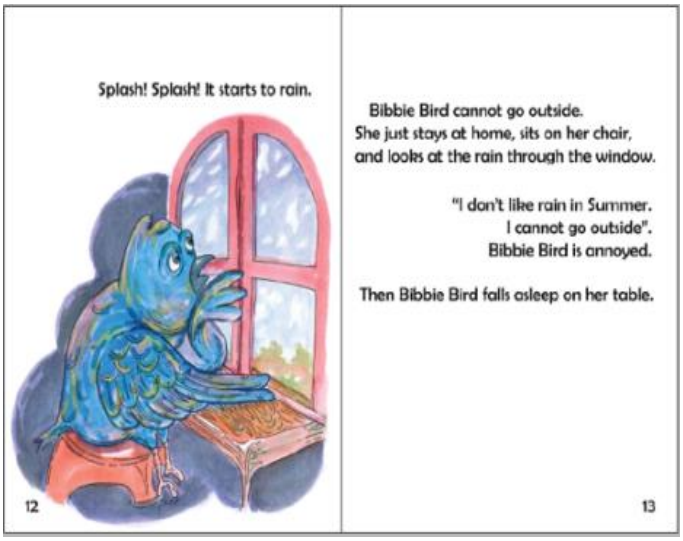
In this study, the implementation of Big Book was conducted six times for the sixth-grade students. The researcher used three Big Books in this study. The theme of the first Big Book was about seasons entitled Bibbie's Seasons Adventure. Then, the theme of the second Big Book was about tourism entitled Riry Rabbit's Dream Holiday. The last theme of the Big Book was about directions entitled Follow Me. In the application of Big Book as media, there were some activities done by the researcher as stated in applying the Big Book [19]. There is pre-reading activity before reading the big book, reading the complete story, re-reading activity, after reading activity, and close activity. During the treatments that had been conducted, the media was applied systematically based on the procedures.

In the beginning of the teaching learning process, students who were taught by using Big Book as media were asked to make a circle in front of the teacher. Then, the researcher started the pre-reading activity before reading Big Book. In this pre-reading activity, the researcher introduced the parts of Big Book such as the front cover, pages, the upper part, and the bottom part of the Big Book, the back cover and how to open the book in the right way. The researcher told the title of the book, the writer of the Big Book, and the illustrator of the Big Book loudly to make the students know about the Big Book. This activity was used to activate the students' prior knowledge related to the story. Then, the students were asked about the possible story of the Big Book based on the title and the illustration on the front cover of the book. The illustration of the Big Book helped the students in constructing the meaning of the story by seeing the picture on the Big Book. Therefore, the students interpret the stories from the pictures. In this activity, the students seemed really enthusiastic to see the Big Book and Big Book can attract students' attention. This is in line with the statement by Nambiar who states that one of the advantages of Big Book was Big Book can attract students' attention because of the unusual size [21]. The following pictures show the front cover of the big book used.

The second activity was reading the complete story. In this activity, the researcher read the story from the first page until the last page of the Big Book continuously. It was done to make the students familiar with the story and encourage them to read independently. The researcher read the story loudly along with the interesting expressions and intonation. Using interesting expressions and intonation made the students focus on the story and it also made them enthusiastic in listening to the story. The researcher stopped on a certain page and asked the students to guess what would be on the next page. It used to check the students' understanding of the story. The students were active and enthusiastic to give their opinions about what would be on the next page of the Big Book. Moreover, the researcher gave additional information about the story or the illustration of the Big Book in order to help the students in understanding the story of the Big Book. The example of pages can be seen in the following picture.



Picture 1. The Cover of The Big Book



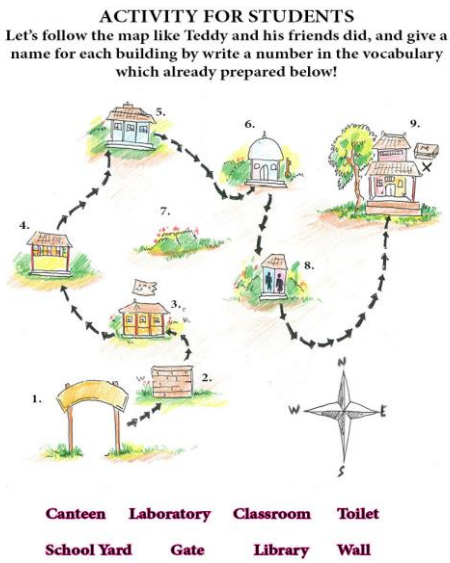
Picture 2. Example of Pages in the Big Book

The third activity was re-reading activity. In this activity, the researcher repeated the story page by page and sometimes stopped in a certain page if there was difficult word that the students did not understand. The researcher showed the words and said it clearly to the students. Showing the words to the students made them familiar with the meaning of the words and it helped the students in comprehending the story. The researcher asked the students to comment on the story and stopped for awhile in the certain page to give chance to the students to guess the next story. Moreover, the researcher also

gave some questions to the students related to the story in the Big Book in order to help the students in comprehending the story.

The fourth activity was after reading activity. In this activity, the researcher discussed the keyword in the story and helped the students to connect one concept with another concept. It was done by relating their own experiences to the meaning of the story as well as their own language to the text indicated comprehension both the story and the function of the text. Then, the researcher and the students read the story together. This was in line with Hall & O'Connor who state that using the big book in the classroom usually involves a shared reading experience [16]. Sugara defines shared reading as an interactive reading experience that occurs when students join in or share the reading of a big book while guided and supported by a teacher or other experienced reader [22]. By using Big Book in shared reading activity the students were able to see the text while it was being pointed to and read by the teacher. They also could discuss the meaning of the story with their friends. Furthermore, the researcher told the students randomly to read the story in front of the class.

The last activity was close activity. In this activity, the researcher gave some interesting activities to the students to check the students' reading comprehension of the story such as by giving guessing word game for the first Big Book, matching game for the second Big Book, arranging a game and completing the missing words game for the third Big Book. In this activity, the students were very active to do the activities given by the researcher. They enjoyed the learning activities in the classroom. The example of the activity can be seen in picture 3.



Picture 3. Example of Activity after Reading

The result of this study indicated that applying Big Book as media in teaching reading comprehension to the sixth-grade students was very helpful. There were some factors which were made Big Book as media helpful for students' reading comprehension rather than conventional media. First, students who were taught by using Big Book as media became more active during the reading class activity rather than students taught by conventional media. Second, Big Book attracted students' attention and encouraged students to read more. Third, Big Book helped the students to construct the meaning of the text and it led them to have a deeper understanding of the text given.

Big Book was effective because students became more active in the teaching and learning process. There were some activities done in applying Big Book as media in teaching reading comprehension and the students were involved in the learning process from the beginning until the end of the activities. In each activity, the students actively asked some questions related to the story and sometimes they asked about difficult words that they found from the Big Book. Moreover, the students also answered the questions enthusiastically. It was in line with the statement by Fahmi, et.al. who state that one of the benefits of Big Book was increased students' participation in reading class activity [18].

Big Book attracted students' attention and encouraged students to read more because of the unusual size of the Big Book and the colorful illustration of the Big Book. As the subject of this study was still categorized as young learners and as one the characteristics of young learners who had limited attention span and they were easy to get bored [11], Big Book was a great media used in attracting students' attention and made them not feel bored by seeing the illustration of the story and it led the students to read more. From the beginning of the lesson, the students gave their full attention to the Big Book. It was in line with the statement by Fahmi, et.al. who state that another benefits of Big Book was improved students' attention and attracted young children curiosity as well as sustained their enthusiasm [18]. Moreover, reading a Big Book is one of the activities that encourage the students to read [17].

Actually, there are some points that should be considered in teaching reading for young learners [12]. One of them was using media. Media helped to create a good classroom situation and media also can be used to help the students in comprehending the material given easily [12]. It was proven in this research in which Big Book as media helped the students to construct the meaning of the text and it led them to have a deeper understanding of the text given. It is because Big Book is big on pictures which assist the students in constructing the meaning of the text [16]. Therefore, students' reading comprehension was developed during the treatment. Reading a Big Book facilitate students' comprehension of a story and enhanced comprehension of texts [17].

To sum up, considering the result of the study, it could be concluded that Big Book as media has been proven effective for teaching reading. It was found effective to be applied for the sixth students of SD Laboratorium Undiksha Singaraja The result of this study supported the findings of some

empirical studies like Tatminingsih in 2013 who found that all children had a good improvement in their reading readiness by using Big Book. Moreover, this current study was also in line with Fahmi et al., in 2013 who found out that Big Book could improve fifth-grade students' reading comprehension. They added that big book also offered a new way in developing students' literacy as well as enhanced comprehension of texts.

IV. CONCLUSION AND SUGGESTIONS

Referring the result that has been presented in the previous chapter, it could be concluded that the use of Big Book as media for teaching reading comprehension of the sixth-grade students was very helpful for students' reading comprehension achievement. Moreover, Big Book also gave some advantages for the students such as Big Book was useful for teaching young learners because it could attract students' attention because of the size of the Big Book. Big Book helped the students to construct the meaning of the text and it led them to have a deeper understanding of the text given. Big Book also encouraged the students to read more and the students' participation increase in the learning process. Furthermore, the result of this study also support the other research that stated Big Book as media have significant effect to the students' reading comprehension, This proves that Big Book as a media is a good thing to be implemented in the classroom learning process.

Based on the research findings, there are several things that the researcher would like to suggest to readers. Specifically, the suggestions were addressed to English teachers and other researchers because it was found that Big Book as media effects better than conventional media on the sixth-grade students of SD Laboratorium Undiksha Singaraja, English teacher should take this finding as a consideration when they teach reading to the students. It has been proven empirically that this media is effective to be used to improve students' reading comprehension. For other researchers who are interested to conduct similar research, it is suggested to improve it by conducting similar research on larger and different population and used many kinds of Big Book. It is also suggested in doing deep analysis in order to find out another benefit that Big Book can give a good effect to the students' reading comprehension.

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Medical Plants in *Usadha: Loloh* as Balinese Medicine and Traditional Herbal Product in Educational Perspective

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***Abstract*— This research aims at conducting an investigation about medical plants written in *Usadha* manuscript (Balinese traditional healing text). The medical plants are ingredients for making herbal namely *loloh*. The sample was selected purposively from several sources. Usadha text about medical plants were analyzed by content analysis. The text data about Usadha was recorded from the traditional healers *(balian)* by using in-depth interviews. Data about potential consumers of the herbal medicine, *loloh,* were obtained from vocational school teachers and lecturers through questionnaire technique. Finding in this research is the enhancement of herbal *loloh* research not merely about the ingredients but also about the educational sight and the value of caring of the health of reproductive organs.**

***Keywords*— loloh, medicine, herbal, education**

I. INTRODUCTION

Traditional medical material is written in *lontar usadha* and has been used by balian's to cure various diseases (Tantra and Rasna, 2017: 106). They are used as 1) *loloh* (herbal drink), 2)*boreh* (powder), *3) tutuh (drop), 4) sumbuh (*spurt*)*, and 5) *oles (rub oil)* [1], [2], [3], [4].

Since a long time ago, biodiversity has been used by our ancestors for medicine [5], [6]. However, the threat to natural resources caused by commercialization is much greater than that from the consumptive needs [7], [8]. This shows the little attention to medical plants [9]. This is confirmed in *Trubus Infolet Herbal Indonesia Berkhasiat*. It is said that there are ony nine special quality plants that have been clinically tested, namely: *Indian bay leaf (Syzygium polyanthum),* green chiretta (Andrographis paniculata), turmeric (*Curcuma longa*), red ginger zingiber (rubrum rhizoma), bay cedar (*Guazuma ulmifolia*), Java ginger (Curcuma zanthorrhiza), common guava (Psidium guajava), Javanese long pepper (*Piper retrofractum* Vahl), and cheese fruit (Morinda citrifolia).

Bali knowledge about the varieties of medical plants, and human health and fitness is written in palm leaves manuscript entitled *Rukmini Tatwa*. The content of *Rukmini Tatwa* comprises the benefits of some medical plants, especially for the health of the reproductive organs. Some benefits namely to improve the function of female intimate organ, to enhance the intercourse enjoyment, to look after the erectile capability of male intimate organ and also to improve the fertility. The knowledge of medical plants is becoming less known by people since the enthusiasm of learning and using the herbal medicine is also regressing day by day [4].

The simplicity of modern medicine causes a shift in popularity of the traditional medicines into the modern ones. This shift is caused by the regress of comprehending the palm leaves manuscript generally and sustaining the lexical of medicine plants [10], [11]. In other words, it can be said there is cultural erosion in Bali especially the knowledge about food plants and nutraceutical [12].

Indonesia is the second greatest country having various biodiversity after Brazil [13]. The existence of biodiversity as medicine has been known since thousands years ago [5].

Traditional healers use *Usadha* manuscripts as the reference for medical treatments. *Lontar usadha* consists of mantras, healing rituals, knowledge about leper especially the symptoms and the herbal ingredients used to cure it. *Usadha Rare* is written about some treatments for children. *Usadha Kuranta Bolong* contains the cure for babies and children. *Usadha Carken Tingkeb* contains types of medical plants; the content of *Usadha Tua* is about some diseases suffered by old people; *Usadha Dalem* contains treatments for internal disease; *Taru Pramana* is a knowledge about plants and the advantages; and *Tutur Buta Kecapi* contains about *balian*'s ethics [14], [15]. Formerly medical plants were used based on experiences [16]. Serat Centhini (1814) is a text about everything concerning Javanese community life, including traditional medical system. The system that has educational aspects.

II. METHODS

The data collection is obtained by recording and interviewing some teachers at vocational schools and lecturers. Besides interview technique, some literary studies are involved including the eighteen palm manuscripts, *lontar usadha*. Several traditional healers including three from lecturers were also involved as informants. They were interviewed through in-depth interview technique. The texts

about medical plants were analysed by using content analysis. There are three groups of data namely: interview text, questionnaires and writings.

The data about traditional healers were obtained through interviewing. The data about medical plants were obtained from literary studies. And the data about potential consumers of the herbal medicine, *loloh*, were obtained from vocational school teachers and lecturers through questionnaire technique.

III. RESULTS AND DISCUSSION

3.1 Researches about loloh as Herbal Medicine

3.1.1 Research about loloh as Medicine

According to Tantra and Rasna [17] traditional drink in the form of *loloh* also serves also as medicine. Kinds of *loloh* namely *1)* Greater galingage (*Kaempferia galanga L.*) *2)* Wild ginger, *temutis* (*Curcuma purpurascens Bl*)., *3)* Wild ginger, *lempuyang* (*Zingiber zerumbet (L)*), *4)* Fruit bearing *(Averrhoa bilimbi), 5)* Blumea, *Sambong (Blumea balsamifera D.C), 6)* Ripening fruit, *kacemcem (Spondias pinata kurz), 7)* Turmeric *(Curcuma domestica), 8)* Cheese fruit *(Monrendi citrifolia), 9)* Betle leave *(Piper betel) , 10)* Star fruit *(Averrhoa carambola) , 11)* Brown rice *(Oriza sativa), 12)* Cinnamon *(Cinnamonmum zeylanicum), 13)* Weedy rice *(Oriza satival F. gulitinosa al auct), 14* Pennywort *(Hydrocotle sibthorpisides lam), 15)* Blumea *(Blumea balsamifera DCF), 16)* Chinese keys *(Gasatrochilus panduratum ridl), 17)* Indian fleabane *(Pluchea Indica (L) Lees), 18)* Sugar apples *(Annona suquamosa L), 19)* Garden shrub *(Graptophullum pictum L.,* and *20)* Cenfella *(Cenfella asiatica (L).* The ingredients of *loloh* as herbal medicine are in Table I. The data are collected from traditional healers, those who are believed having ability to cure [18].

TABLE I. LIST OF MEDICAL PLANTS

No.	Name of medical plants	Scientific Name	Useful parts of plant	Indications (according to informants)		Composition
				Usadha	Traditional Healers	
1.	Greater galingage	*Kaemferia galanga L.*	Tuber/root	cough, rheumatism, itchy skin, babies' stomach ache	cough, rheumatism, itchy skin, stomach ache	Volatile oil with the components: Etil, metoksisinamat, etilsinamat, borneol, karbon
2.	Wild ginger *Temutis*	*Curcuma purpurascens Bl*	Tuber	joints swelling, difficulty urinating, cough, hard breathing in children, diarrhoea containing bloo	joints swelling, difficulty in urinating, cough, hard breathing	Volatile oil, champor, bereol (Suryadarma (2010: 301)
3.	Wild ginger, *Gamongan*	*Zingerber aromaticum vall*	Tuber	pain in the right part of stomach, drop in consciousness, swelling in legs, asthma, anemia	pain in the right part of stomach, drop in consciousness, swelling in legs, asthma,	Volatile oil, limonen and zirumen (Suryadarma, 2010: 301)
4.	Fruit bearing	*Averrho belimbi L*	Flower, root, leave	heatiness, reddish faeces	heatiness, reddish faeces	Saponin, tahiurn, format acid, glucosada, ocsalad calcium (Hariana, 2009: 36) [19] ; Dalumarta,2008: 8)[20], Fitol, Flavonoid tanin, citric acid, citric calium (Mun'im,201:3) [21]
5.	Blumea, *Sambong*	*Blumea balsami fera D.C*	Leave	urine problem (containing blood and pus) (Tengah,1995: 638)	urine problem (containing blood and pus)	Bormeol, cineol, meal, eter, palmitinacid, (Septian, 2009: 232)[22]
6.	Ripening fruit, *Cemcem*	*Spondia pinata kur*	Leave, skin	*goiter*, Diabetes	*goiter*	--
7.	Turmeric, *Kunyit*	*Curceema domistica*	Tuber	fever, flu, rhematics, diarehea	fever, flu, rheumatic	Water, calorie, carbohydrate, protein, calcium, phosphorus, vitamins A<B,C, volatile oil, curcumin (Sejati, 2003) [23]

8.	Cheese fruit	*Morindi citrifolia*	Fruit, root	fever, lack of appetite	fever, lack of appetite	Root: Cepronacind, Carsilat acid, morindi, Leaf: protein, lime, iron, carotin (Hariana, 2009)
9.	Betle leave, *Base*	*Piper betle L*	Leaf	womb refresher, curing cough	womb refresher, curing cough	Volatile oil, cavical, carvocal, (Nuraimi, 2014 [24], Elshabrana, 2013 [25])
10.	Star fruit, *Belimbing*	*Avverhoa carambola*	Leaf, stem	absces, goiter, urinary problem stomach ache	absces,goiter, urinary problem, stomach ache	Tanin, sufur, format acid, calcium ocsalat, (Nuraini, 2014: 16-170
11.	Brown rice, *Baas Barak*	*Oriza sativa linn.F*	Fruit	lack of appetite, dry lips, diarhea, painful stomach, diarhea and bleeding, diabetes	lack of appetite, dry lips, diarhea, painful stomach, diarhea and bleeding, diabetes	Carbohydrate, protein, tiamin, low glicemic inde amino acid, iron, selenium fiber, vitamins B 6, phytochemical fenolat magnesium (Khalil, 2016: 49) [26]
12.	Cinnamon, *Kayu manis*	*Cinnamomun Zeylanicum Ness*	Tree, leaf	white mouth, dirty condition and infection, *gout*, stomach ulcer, gastric problem	white mouth, dirty condition and infection, *gout*, hernia, stomach inflammation, gastric problem	Volatile oil, tanin, resin, (Putra, 2014: 155) Sinamaldehid 60-75%, sinamil acetat, cugenol 1-5^, betha carotine 1-4%, linalso 1-35 (Mun'in, 2011;83)
13.	Weedy rice, *Ketan gajih*	*Oriza satvival F. Glutinosa alba Auct*	Grain	baby stomach disorder, suffering from intestinal worms lack of appetite, high fever, restlessness	baby stomach disorder, suffering from intestinal worms lack of appetite, high fever, restlessness	Protein 7.0 g, fat, 0.7t, carbohydrate,78.0 g, calsium 10.0 mg, fosfor, 148.0 mg, iron, 0.8 mg, vitamin B1 0.2 mg and water 13.0 mg (Khalil, 2016: 93)
14.	Pennywort, *Sumanggigunung*	*Hydrocotyle sibthrpioides lain*	Leaf, stem root	cough with bleeding	cough with bleeding	coumarin, hiperin (Damartha, 2008: 159 -160 BS geuBm 1\2013: 327)
15.	Blumea, *Sembunggantung*	*Blumea Basamifera DCF*	Leaf	intestinal worms	intestinal worms	-
16.	Chinese keys, *Temu Kunci*	*Gastrochilus panduraum Ridl*	Tuber	dry cough, oral ulceration, urine problem, ringworm, gallstone, painful penis	dry cough, oral ulceration, urine problem, ringworm, gallstone, painful penis	Sineol, champho r, d-orneol d- pinen, sisquin torpen, zingiboon curcumien, zedoarin, amilum, resin) Tengah, 1995: 688-689) [26]
17.	Indian fleabane, *Bluntas*	*Pluchea Indicia (L) Lees*	Leaf	lack of appetite, digestive problem, fever, cough, difficult breathing	lack of appetite, digestive problem, reducing fever, cough, difficult breathing	Alkaloid, volatile oil, quercetine, saponin, propofenol, flavonid, alkaloid (Untung, Trubus, n.d: 216) [28]
18.	Garden shrub, *Temen*	*Graptophllum Pictum L*	Leave	Cough, flu	Cough, flu	-
19.	Sugar apples	*Annona suquamosa L*	Fruit, leave	Abses, dog worms	Abses, dog worms	Borneal, comphor, terpene alkaloed anonam im roost and bark. The seeds contain fat, resin. The fruit contains amino acid and tannin

						(Hariana,2013; 358-359)
20.	Cenfella, *Peduh*	*Cenfella asitica (L)*	Leave	Reducing fever	Reducing fever	Asiaticoside, Thnkunside medicassoside/bfah mocide madasiatic acie (Hariana, 2018:274)

3.1.2 Research on *Loloh* as Balinese Traditional Drink

The ingredients for this Balinese traditonal herbal drink are found in *lontar usadha* that describes the medical plants [29], [30], [31]. Traditional food is consumed by certain ethnic communities [32]. Traditional food has the competitive advantage that is natural, rich in taste and available all year long [33]. The weakness is the unattractive presentation, local taste, nonstandard mixture [34]. Apart from this, industry drink products monopolize local, national and international markets [35]. We are very aware that the drinks by alcohol. The ex-President of France said that our greatest enemy is alchoholic drink. It will cause us a greater problem than the battle against German [36]. In the light of these problems, it is time for moving from alcohol consumers to traditional drinks , except *tuak* ,and *arak*, as traditional drink can increase the community economy [36], [37], [38]. If the traditional drink is presented in a modern presentation, laboratory testing, so that it meets health requirements, it will bring benefit for holding capacity of tourism development and creative economy through local culinary since tourism sector needs support from natural food and drink providers [39].

Medical plants can function as medicine and herbal beverages, for example *kencur* to cure cough, rheumatism, itchy skin, disease suffered by babies. In addition, it can also be used as herbal treatments such as *jamu beras kencur*. Similarly, wild ginger, *temutis* as to cure swelling, mix with red ginger to serve as herbal drink. Cheese fruit can cure fever, lack of appetite. In addition, it can be used as a herbal drink. This happens because the plants serve as medicine [16]. The use of natural substances as traditional medicine in Indonesia has been done by our ancestors [40]. The use is related to the historical background of Bali community life [41]. The background is that Balinese were farmers, the people were close to agricultural crops like ginger, turmeric, rice and galingale, wild ginger temu lawak, which are traditional drink ingredients. The use of herbal drink is part of the nation's culture [42], both as a drink and a medicine. The basic ingredients of *jamu* (traditional herbal drink) are ginger, turmeric, wild ginger *temulawak* and galingale which are usually used as traditional medicines, since the effectiveness of the spices that is related to antioxidant in ginger [43], turmeric as anti-rheumatic [44], *temulawak* as anti-hepatitis [45], [46], [47]. Out of all kinds of *loloh* (herbal drink), not all have commercial potential because of their tastes. Those that have the commercial potential are galingale, *temutis* (*Curcuma Purpurascens*), *cemcem (Spondias Pinata Kurz) , mengkudu (Morindi Cirifolia), brown rice (Oriza sativa linn.F), beluntas Pluechea Indica (L) Lees)* and turmeric.

sold in the market contain much alcohol which is consumed not only by young people, but also by below young children , old people, celebrities, political elite [36].

In U.K. scholars stated that 95% of mental cases were caused by alchoholic drinks. French Health Minister said that the mortality rate caused by alcohol is 20.000 people each year. Secretary General of the Committee for Alcohol Eradication stated that 25% of the industrial accidents and 57% of highway accidents were caused

3.1.3 Medical Plants in Educational Perspective

The use of medical plants to be *loloh* are not only about the advantage of herbal medicine but also about the health education. In this case, the educational perspective has its role. *Loloh* is useful as herbal treatments which usages, ingredients and dosages have to be learned. Meanwhile the plants have to be available during the necessary time. It means that the plants have to be cultivated. It should be learned how to seed, to plant, to look after, and to harvest the plants especially how to choose the best harvesting time that is related to the quality of the crops.

People also would like to know the names of those medicine plants. The names and the description are studied by using Ecolinguistics approach.

The customs of cunsuming *loloh* is one of some efforts to grow the caring of local culture and natural products. The next educational perspective is that by maintaining the customs of consumming *loloh*, people tend to be economists, especially in saving expenses for buying any other supplements or chemical medicine.

The customs of consuming *loloh* can emerge the curiousity of mantaining, and preserving both the medical plants and the planting areas. The younger generations by the help from their seniors would learn more about *loloh*. Especially, children would learn about the kinds of medical plant and the plants' characteristics. This learning is related to ecolinguistics.

The knowledge of medical plants cultivation has eco-pedagogical, ecological, and ecolinguistical practices. Moreover, the cultivation of medical plants can coincidentally grow the eco-tourism since there should be a parralel process of cultivating and producing the herbals, which are actually kinds of attraction.

The next educational aspect is the area of medical plants cultivation can be a natural laboratorium for students to learn many disciplines, among them, the etnofarmachology, ecolinguistics, and etnobothany.

IV. CONCLUSION AND SUGGESTION

1. The research about the ingredients of *loloh* as medicine comes from usadha balian and the contents of its main ingredients scientifically has a logical relation. The main ingredients of the medicine are Greater galingage (*Kaempferia galanga L.*) Wild ginger, *temutis* (*Curcuma purpurascens Bl*)., Wild ginger, *lempuyang* (*Zingiber zerumbet (L))*, Fruit bearing *(Averrhoa bilimbi)*, Sambong *(Blumea balsamifera D.C)*, Ripening fruit, *kacemcem (Spondias pinata kurz)*, Turmeric *(Curcuma domestica)*, Cheese fruit *(Monrendi citrifolia)*, Betle leave *(Piper betel)*, Starfruit *(Averrhoa carambola)* , Brown rice *(Oriza sativa)*, Cinnamon *(Cinnamonmum zeylanicum)*, Weedy rice *(Oriza satival F. gulitinosa al auct)*, Pennywort *(Hydrocotle sibthorpisides lam)*, Blumea *(Blumea balsamifera DCF)*, Chinese keys *(Gasatrochilus panduratum ridl)*, Indian fleabane *(Pluchea Indica (L) Lees)*, Sugar apples *(Annona suquamosa L)*, *Garden shrub (Graptophullum pictum L.*, and Cenfella *(Cenfella asiatica (L).*
2. The research of *loloh* as Balinese traditional herbal drink shows that it has the strength because it is natural, useful as medicine and has the economic potential. The herbal plants in this category are galangal, wild ginger, *temutis*, ripening fruit, *turmeric*, cheese fruit, brown rice, chinese keys, and blumea.
3. Medical plants have the educational perspectivees specifically it encourages an interdisciplinary studies, namely, ecology, eco-pedagogy, ethno-pedagogy, ethno-botany, eco linguistics, and ethno-pharmacology. Besides the cultivation of medical plants emerges the development of ecotourism.

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Development Of Critical Thinking Disposition Inventory

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***Abstract*— The aims of the study was to produce an inventory of critical thinking disposition. The inventory was used to measure critical thinking disposition of junior high school students. Model of the study was research and development. Stages of the study included (a) research and information collecting, (b) planning, (c) develop a preliminary form of product, and (d) preliminary field testing. The inventory was based on seven scales of critical thinking disposition of American Philosophy Association, including (a) truth-seeking consisting of five subscales, (b) open-mindedness consisting of three subscales, (c) analyticity consisting of eight subscales, (d) systematicity consisting of four subscales, (e) critical thinking self-confidence consisting of five subscales, (f) inquisitiveness consisting of two subscales, and (g) cognitive maturity consisting of six subscales. Results of expert validations and readability testing showed that, in general, the inventory being developed was very appropriate to measure the critical thinking disposition of students.**

Keywords— critical thinking; disposition; inventory

I. INTRODUCTION

Critical thinking is one of the most important thinking that is needed by everyone in solving problems and or making important decisions in daily life. Critical thinking is not a birth-gift and yet it needs to be developed throughout the life process. Critical thinking can be trained.

Critical thinking is necessary to solve problems and make decisions during school learning. Critical thinking is not only required by students at the higher level but is also needed at lower levels. In order the students to have the critical thinking, this critical thinking needs to be trained during the learning process by confronting students with challenging problems. These challenging issues are ill-structured and open-ended problems.

Critical thinking consists of two aspects. First is the attitude aspect and the second is the knowledge and skill aspect. This knowledge and skills of critical thinking are referred to as critical thinking abilities. The critical thinking abilities are often referred to as the critical thinking skills only. In the attitude aspect, this critical thinking is a critical thinking disposition. The critical thinking disposition is the soul or critical spirit that encourages a person to use the critical thinking skills. The results showed that critical thinking disposition affects critical thinking skills. Meanwhile, the disposition of critical thinking was a prerequisite for developing critical thinking skills [2].

The disposition of critical thinking can be interpreted as a tendency for a person to think critically. There are some experts who put forward the characteristics of critical thinking disposition, including (a) asking questions clearly and reasonably, (b) trying to understand others' ideas well, (c) using reliable sources, (d) taking into account the situation as a whole, (e trying to remain relevant to the underlying problem, (f) keeping to refer to the original problem, (g) looking for alternatives, (h) being open, (i) taking a position, (j) acting fast, (k) holding that something is part of a complex whole, (l) exploiting the critical thinking of others, and (m) being sensitive to the feelings of others [3]. Someone who has a critical thinking disposition tends to (1) make himself or herself convinced that his or her opinions and decisions are correct, (b) understand and respect someone clearly and candidly, and (c) care about others [4]. On the other hand, there is seven scales of critical thinking disposition, namely: (a) inquisitiveness (b) systematicity (c) analyticity, (d) open-mindedness, (e) cognitive maturity, (f) truth-seeking, and (g) critical thinking (CT) self-confidence [5].

Someone may have the ability to think critically but does not tend to apply it [6]. Only someone who has the critical thinking disposition will use his critical thinking skills. Thus it can be said that the critical thinking disposition is a very important thing owned by students. By having a high critical thinking disposition, students will be able to use their critical thinking skills that can assist them in mastering the subject matter learned and solving problems encountered in everyday life. Along with that, scores of critical thinking disposition of students is very important to know. Therefore, an instrument is needed to measure the disposition score of students' critical thinking.

Some experts have developed several instruments to measure the disposition of critical thinking. One of the most commonly used measuring instruments is the California Critical Thinking Disposition Inventory (CCTDI) developed by the American Philosophy Association in Delphi Project in 1990 [5]. The disadvantages of using CCTDI in measuring critical thinking dispositions are that this inventory is expensive and uses English and Western cultural context so difficult to understand by the respondents when used to

measure the disposition of critical thinking of students in Indonesia. Based on the description, it can be said that the development of inventory disposition of critical thinking is very important to do.

The inventory to measure the critical thinking disposition of students using Indonesian language and Indonesian cultural context has not been developed. This study will develop the critical thinking disposition inventory that can be used to measure students' critical thinking disposition.

II. METHOD

The study used research and development method [1]. The study only involved stages of research and information collecting, planning, develop the preliminary form of product, and preliminary field testing. The preliminary field testing involved an expert validation and readability testing.

A. Research and information collecting

At this stage, literature study and field study were conducted. The literature study was done by examining the documents related to the theory of inventory and scales/subscales of the critical thinking disposition. The field study was conducted through administrating questionnaires to teachers and students of junior high schools. The number of teachers and students involved in this study were 90 and 406, respectively. These teachers and students came from 10 junior high schools in Buleleng regency of Bali, namely SMPN 4 Tejakula, SMPN 1 Kubutambahan, SMPN 2 Sawan, SMPN 1 Singaraja, SMPN 4 Singaraja, SMPN 1 Sukasada, SMPN 1 Banjar, SMPN 1 Busungbiu, SMPN 1 Seririt, and SMPN 3 Gerokgak.

B. Planning

At this stage, the creation of a critical thinking disposition guideline was made. The making of this guideline involved determining the scales and subscale of critical thinking disposition, the number of statements, the nature of the statements, and the students' response format. This was done so that the inventory developed was right on target.

C. Develop preliminary form of product

At this stage, statement formulations were made for each subscale of critical thinking disposition. The formulations of statements consisted of positive and negative statements with almost equal numbers. This was so that students did not fill inventory on an arbitrary basis.

D. Preliminary field testing

Preliminary field testing included expert validation and readability testing. In the expert validation, the developed inventory was validated by two experts, i.e. psychologists and linguists. Both experts read and evaluated the inventory carefully and then gave inputs. These inputs were used to revise inventory.

The revised inventory was then tested for readability to the 10 students through focus group discussions. They read carefully it and try to understand the meaning of each statement. Statements that had not been understood well by students were presented to authors and then were revised.

III. RESULTS AND DISCUSSION

A. Results of the study

1. Results of research and information collectiong

The results of the literature study stage were the definition of critical thinking disposition, as well as scales and subscales of the critical thinking disposition according to some experts [4], [5], [7]. In the literature study stage, it was also obtained results about the cognitive development of junior high school students. The age of junior high school students is generally around 11-15 years. According to Piaget's theory, students over the age of 11 enter formal operational phase [8]. In this phase, a child can already think abstractly so it can be said that the critical thinking disposition inventory can be tested to junior high school students.

Results of questionnairy distribution to the teachers showed that most teachers had facilitated the development of students' critical thinking dispositions including (a) truth-seeking, (b) open-mindedness, (c) analyticity, (d) systematization, (e) CT self-confidence, (f) inquisitiveness, and (g) maturity. Most of them also argued that it was important to make an instrument to measure the critical thinking disposition of junior high school students so that they can more easily assessed the critical thinking disposition of students.

The results of questionnairy distribution to the students showed that in general most students stated that they had developed a critical thinking disposition during the teaching and learning. The scales of critical thinking disposition developed by students were (1) truth-seeking, (2) open-mindedness, (3) analyticity, (4) systematicity, (5) CT self-confidence, (6) inquisitiveness, and (7) maturity.

2. Scales and subscales of critical tihinking disposition

Scales used to design the critcal thinking disposition inventory were ones being developed by American Philosophy Association dalam Delphi Project [5]. Meanwhile, subscales were made by modifying subscales developed by American Philosophy Association dalam Delphi Project [5]. All scales and subscales used to design the critical thinking disposition inventory were presented in Table 1.

TABLE I. SKALA DAN SUBSKALA INVENTORI DISPOSISI BERPIKIR KRITIS

No.	Skalas	Subskalas
1.	Truth-seeking	a. Tring to find out the truth clearly b. Having spirit to ask questions c. Being objective/honest toward information d. Trying to understand something well e. Using trusted sources
2.	Open-mindedness	a. Considering other ideas in making their own decisions b. Being tolerant of the different ideas c. Changing opinions when they were refuted by strong facts/evidence
3.	Analyticity	a. Being aware of the risks and possibilities that will occur from an event b. Being able to give a reason when faced with complicated problems c. Being able to provide objective evidence against a particular problem

		d. Being able to think logically e. Estimating advantages and disadvantages of phenomena f. Being able to relate results of observation with existing (knowledge) theories g. Looking for alternative solutions of problems h. Contemplating basic concepts that have been understood
4.	Systematicity	a. Thinking and acting in organized manner b. Focusing on problems c. Using inquiry methods to solve problems d. Do not hurry to draw a conclusion from information
5.	CT self-confidence	a. Having confidence in his own opinion and decisions b. Believing on results of self-reasoning c. Having confidence to lead other people to a rational problem solving d. Daring to take action or a decision e. Being proud of your own abilities to solve problems
6.	Inquisitiveness	a. Having a high learning spirit even when the application of the studied science has not been seen directly b. Having spirit to learn new things
7.	Cognitive maturity	a. Do not get rid of problems b. Realizing that some problems are related to each other c. Realizing that an assessment must be based on criteria d. Avoiding actions that confuse /intimidate others with critical thinking skills possessed e. Showing calm in thinking f. Understanding other people's way of thinking

3. Draft of inventory

Based on the data in Table 1, it could be seen that the total number of subscales used to construct a critical thinking disposition inventory was 33 items. On each subscale, it was made two corresponding statements, one positive statement and another negative statement. The responses to each statement were based on the Likert scale, i.e. : strongly disagree (score 1), disagree (score 2), neutral (score 3), agree (score 4), and strongly agree (score 5). The development result was a draft of critical thinking disposition inventory.

4. Results of preliminary field testing

The results of validation by psychologists showed that the selected scales and subscales were appropriately used to measure the critical thinking disposition. In addition, the validation results showed that there was a relationship among the scales, subscales, and statements used in the inventory. Meanwhile, the results of validation by linguists, in general, showed that most of the statements listed were appropriate and had a clear meaning.

Results of readability testing showed that most statements of the critical thinking disposition could be understood by students. However, there were some words being not understood by students, for example: "alternatif (alternative)," "pilihan (option)," "terorganisir (organized)," and "insting (instinct)." Authors revised those words.

B. Discussion

The critical thinking disposition is an attitude that can help students to master the subject matters well. A person can have critical thinking skills but does not tend to use them [6]. Only people who have a critical thinking disposition will attempt to use their critical thinking skills.

Students having the critical thinking dispositions in the term of truth-seeking and open-mindedness always try to know and understand information clearly, take into account others' opinions and be flexible with their own stance. Open-mindedness is not only about how we accept others' views who are different from what we have, but also about how we can accept if others can think of something more than us or if our own opinions may be wrong [9]. This attitude helps students during the learning process to understand and explore subject matters being learnt.

Students having the critical thinking disposition in term of analyticity have a tendency to be cautious about what will happen. This can help students analyze the consequences of good or bad situations, choices, or plans. In addition, students also tend to be accustomed to ponder the basic concepts that have been studied carefully and can relate the theory that he learned with the events he encountered in everyday life.

Students having a critical thinking disposition in the term of cognitive maturity tend to face the problems thoroughly. This familiarizes the students with responsibility for the problems to be solved. Based on the description, it can be concluded that the critical thinking disposition is very useful for students, especially in helping students to have the spirit of learning and achievement motivation, and understand and master the subject matters. Students having the critical thinking disposition have the attitude, the spirit, or the motivation to use and develop their thinking skills so they can improve the mastery over the subject matters.

The inventory of critical thinking disposition will help teachers to provide information about the critical thinking dispositions of students, both instantaneously [2], [10], [11], [12], [13], [14], and periodically [15], [16], [17], [18]. By providing this information, teachers can design appropriate learning strategies to improve students' critical thinking disposition. Related to this, it had been developed various learning strategies to improve the critical thinking disposition of students, namely: guided reciprocal peer questioning [19], microteaching [20], technology facilitated problem based learning pedagogy [21], infusion approach [22]. The critical thinking disposition had been investigated strongly in relation to emotional intelligence skill [23], self-efficacy [24], students' learning styles [25], students' performances [26]. Meanwhile, the critical thinking dispositions encourage students to develop dialogue skills [27]. Even, the critical thinking disposition can be used to predict the success of students in practicum [24].

Some researchers had developed the inventory of critical thinking disposition by modifying California Critical Thinking Disposition Inventory [7], [28]. This is done in order to provide an instrument for measuring the critical thinking disposition of students in which this disposition is essential for developing the critical thinking skills of students.

IV. CONCLUSION

Characteristics of inventory developed used seven critical disposition scales: (1) truth-seeking, (2) open-mindedness, (3) analyticity, (4) systematicity, (5) CT self-confidence, (6) inquisitiveness, and (7) cognitive maturity.

The validation results of psychologist and linguist showed that the critical thinking disposition inventory developed was appropriate for measuring the students' critical thinking disposition. The results of the readability testing showed that in general the inventory of critical thinking disposition developed was well understood by the students.

Based on the results of this study, it can be suggested that this inventory needs to be further empirically tested to determine the validity of the items and the reliability of the instrument. With the fulfillment of item validity and instrument reliability, this inventory can be used to measure students' critical thinking disposition.

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Developing A Lesson Study Based Course Book For Learning Material Development Course

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***Abstract*—This study was aimed at producing a course book for material development course at Educational Technology Department of the Faculty of Educational Science, Universitas Pendidikan Ganesha through a lesson study as an effort to improve quality of instruction. This study was a development research. The course development used Hannafin and Peck material development model that consists of need analysis, design, development and implementation, evaluation and revision. The data were analyzed using descriptive analysis technique and inferential statistical analysis (t-test). The results showed that (1) the course book was developed following the stages of analysis, design, development and implementation with evaluation and revision in each stage; (2) the course book got a good score from experts, and the students; and (3) the course book was evaluated through lesson study which showed that there is a significant difference in the students' achievement between before and after using the course book.**

Keywords—course book, lesson study, learning achievement

I. INTRODUCTION

Competency is something that has always been the topic of discussion in various aspects of life. Especially in educational sector, it is always used as a criterion by educational practitioners in conducting educational practices. According to Act No 14 of 2005 concerning teachers and lecturers, competency is a set of knowledge, skills, and behaviors that ought to be possessed, experienced and comprehended fully as well as mastered by teachers and lecturers in conducting their professional duties [1]. Based on that definition, competency is a set of expertise and capabilities that a teacher or a lecturer ought to possess to be able to do his or her job well to produce a teaching and learning process in accordance with the desired goal. This indicates that before educating the students to become competent, the educator ought to be competent. Therefore, a teacher or a lecturer as an educator plays an important role in education and needs to be developed to become a professional educator. With a professional attitude it is hoped that he or she can offer a quality education in an effort to develop reliable human resources in academic, socio-personal and vocational aspects.

One of the problems or topics that have been interesting to discuss in education recently is teaching effectiveness. A less than effective teaching tends to focus on how a teacher teaches rather than how students learn. This paradigm triggers an instructional implementation that tends to be conventional, that is, through oral communication technique. This understanding is of course in opposition to the understanding of constructionists [2]. These scholars state that teaching means designing external events to support the development of learning process on the part of the students which is internal in nature. This conception has two major points: (1) teaching is something that is designed by the educator and (2) the objective of teaching is to improve or to support the learning process on the part of the students. In addition to the educator factor, the less effectiveness of teaching is also due to learning resources, that is, a set of materials designed systematically to reach a competency. Course books are different from textbooks. Textbooks are not designed based on competencies of a course but are more oriented towards a general objective. This phenomenon also occurs in the teaching of instructional materials development in Educational Technology Department of Educational Science Faculty of Ganesha University of Education. In which textbooks are still used as the students' handbooks. The result of study shows that teaching that only uses textbooks can cause a low learning achievement. Based on scholars' opinions and the result of that study there is a significant effect of instructional design on quality of teaching.

As one of the alternative solutions in overcoming the teaching practice problem of less effective teaching is through an implementation of lesson study. Lesson study is an educational professional development model through investigating teaching collaboratively and sustainably based on collegial principles and mutual learning to develop a learning community [3]. Lesson study is conducted systematically in which the educator's performance is systematically developed collaboratively by preparing lesson plans and teaching materials, doing observations, reflections and revisions of lesson plans cyclically and continually. The alternative solution proposed to solve the problem of non-existing course books is by developing them.

The importance of developing course books lies in the function of the writing of them. In terms of their function, course books are very crucial since the writing of one gives a great contribution to success in learning. According to

Departemen Pendidikan Nasional, based on people who use them, there are two functions of the writing of course books: for the educators and for the students [4]. For the educators the course books can (1) save the time in teaching, (2) change the role of educator as a teacher into a facilitator, (3) improve learning process to become a more effective and more interactive one, (4) as a guide for the educator that will orient all the activities in the learning process, and (5) as an instrument of evaluating the achievement or mastery of learning. For the students the teaching materials can (1) facilitate self-learning, (2) make learning more flexible, (3) learning can be fit into the speed of each student, (4) the students learn according to the sequence that they choose by themselves, (5) it helps to develop the students' potentials to become autonomous learners, and (6) as a guide for the students who will direct all their activities in the learning process. The function of the teaching materials based on the teaching strategy used is that they can be used in classical, individual and group learning.

The development of course books follows the instructional product developmental model. What makes it different from other developments is in the designing, developmental, and implementation phases of educational books in the classroom which are done through lesson study activities. Some considerations are: general competencies in the educational books and refer teaching materials can be broken into more complete, logical and systematical specific competencies since they are formulated by some lecturers who teach the same course that they can complement with each other and collaborate; (2) the design of the teaching focuses on accommodating optimal students' competency development; (3) the implementation of the course books is more optimal since the result of the analysis by the lesson study team becomes the guide in improving the quality of teaching process in the next meeting; and (4) improvement of the quality of teaching process and learning achievement as the effect of improvement of the weaknesses of the teaching process. These considerations are made with the reference to the major goal of lesson study according to Bill Cerbin & get Bryan Kopp, that are (1) to gain some better experience about how students learn and teachers teach; (2) to get certain results that are useful for the other educators in how to teach; (3) to improve teaching systematically through collaborative inquiry (4) to develop a pedagogical knowledge, in which an educator can learn from other educators [5]. Catherine Lewis states that one of the essential characteristics of lesson study is that it focuses on materials that are regarded important but are the weak points in the teaching of the students and very difficult to learn. The course books that are developed through lesson study can be expected to help the students in facilitating them in understanding the materials that they regard difficult [6].

In addition to the considerations above, the results of research done by Winarsih and Mulyani showed that the development of learning materials through lesson study has been able to improve the learning process and achievement of the students. Based on some advantages and of lesson study, the importance of course books as one kind of learning materials, and results of research, then the researcher was interested in doing a study entitled [7].

By referring to the above discussion, the aims of this study were (1) to describe the procedures in course book development, (2) to describe the results of validation of the course book developed by experts and students, and (3) to explain the effectiveness of the course book developed in improving the students' learning achievement.

II. METHODS

This study was a development study. Development study is a study that is oriented towards the development and validation of products used in education [8]. This study used pre-experimental one group pretest posttest design. The design can be seen in Figure I.

Pretest	Independent Variable	Posttest
O1	X	O2

Fig. 1. Pre-experimental Design

By using Hannafin & Peck's model (1987) which consists of three major processes, namely: need assessment, design and development and implementation, the course book was developed. The evaluation and revision were made in three phases.

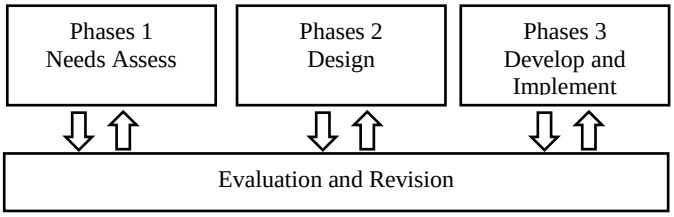

Fig. 2. Phases in Hannafin & Peck's Model

In the need assessment stage some activities were done. They were (1) analysis of instructional problems, (2) analysis of competencies required from the students, (3) analysis of the students' characteristics in terms of learning capacity, knowledge, skills, attitudes and other relevant aspects, (4) analysis of materials that suit the requirements of the competencies and (5) analysis of learning resources. In the design stage the action was focused on three activities: (1) materials selection that meets the characteristics of the students and the requirements of the competencies, (2) instructional strategy selection and (3) design of the format and method of assessment used. In the development and implementation stage the course book prototype as the product of development was produced. In the development of the course book, the researcher sought all resources and references, drew pictures, charts and tables to support the presentation of the materials, typed the materials, determined the layout, wrote the instruments of evaluation, and other things related to the materials development.

The product was a course book that had to be tried out in the real situation in the field to obtain the picture about the level of validity, effectiveness, and attractiveness. There were three activities done in the implementation stage. They were (1) planning, (plan), (2) implementation (do) and (3) reflection (see). The lesson study team planned the designing of materials, consisting of the writing of the syllabus, lesson plans, student worksheets, instruments of evaluation, and the course book. In the implementation (do) stage, the model lecturer implemented the materials and the course book. Before the teaching started, a pretest was given and then the teaching was carried out using the course book for four meetings. During the implementation of the course book through lesson study, a project based teaching was implemented. At the end of the fourth meeting a posttest was given to find out whether an improvement was made in the effectiveness of the teaching. The lesson study team played the role as observers. In the reflection (see) stage, the lesson study team met and then the model lecturer explained the constraints faced during the teaching process, and then the observers were invited to present the result of observation and analysis of the result which was then used to improve the teaching.

The evaluation and revision activities took place from the beginning to the end so that there were evaluation and revision activities in every stage. To evaluate the course book Dick, Carey and Carey formative evaluation model was used. The model covers three stages: individual evaluation (3 persons), small group evaluation (12 persons), and field evaluation (38 persons). The three stages of evaluation were started by expert reviews: content, media and design reviewers [5].

The data were collected using questionnaire, test and observation methods. The data collected were then analyzed using qualitative descriptive, quantitative descriptive analyses and inferential statistical analysis (t-test). The inferential statistics or the t-test was used to analyze the score difference between the pretest and the posttest of the course book implementation.

III. Result And Discussion

The product of this research and development is a course book, which was developed in a Hannafin & Peck's model (1987) that consists of three major processes: need assessment, design, and implementation and in each of the processes evaluation and revision are done. The picture of the product of the development can be seen in Figure 3.

Fig. 3 Product of the Development

The development of the course book followed a series of validations by experts. The result of the content expert showed that the course book is good. This means that the course book contains facts, concepts, principles and procedures that are suitable for the students. The result of media expert's validation showed that the course book falls into a good category. This indicates that the pictures in the course book are suitable in explaining the concepts, principles, and procedures in the course book. The result of design validation showed that the course book meets the criteria for instructional design, instructional message design and the appropriateness in the use of the types of assessment.

After the course book went through the validation processes by the experts, it was evaluated by the students. The result of personal evaluation (by 3 students), small group evaluation (by 12 students) and field evaluation (38 students) showed that the course book has a good level of validity. This indicates that in terms of clarity, capability of motivating, attractiveness, and facility in understanding the materials, the course book is regarded as suitable to be used by the students. This is also supported by the opinion of a student who wrote a comment in the instrument that "the course book is good and easy to understand".

The course book that has gone through a series of expert evaluations and student evaluations and some improvements has been made. Then it was used in a class to find out the level of its effectiveness in improving the students' learning achievement. In using the course book lesson study approach was implemented. The result of paired samples t-test showed that the significance level obtained was 0.001, less than the criterion level (0.05). This means there is a significant level between the students' learning achievement before and after learning Material Development through the course book. The mean score of the pretest was 71.42 and the mean score of the posttest was 85.15. The result of the t-test using SPSS is shown in Table 1 as follows.

TABLE I PAIRED SAMPLES TEST

		Paired differences					t	df	Sig. (2-tailed)
		Mean	Std. deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest-posttest	-13.728	10.765	1.746	-17.266	-10.189	-7.861	37	0.001

Based on the t-test result it is apparent that the course book can effectively improve the students' learning achievement. This result is parallel to the result of Lee and Osman's study that shows that a course book is effective in improving the students' learning achievement [9].

There are some factors that caused the difference in mean score of learning achievement between before and after using the course book. First, the course book was developed based on learning theories, instructional theories, and instructional message design theory. Thus, the course book is oriented to the learning process that takes place because of the synergy of short term memory and long term memory being activated through the creation of external factor or learning environment [10]. The course book as one of the components of the learning environment contains texts, pictures, illustrations, cases, and a number of authentic tasks that motivated the students to read, relate their prior knowledge and new knowledge, discuss, and implement theories in a real situation. These practice activities are parallel to what is stated by Silberman that "what I listen, see, discuss and do give me knowledge and skills" [11].

The course book was developed based on learning theories. The presentation of the materials in the course book was based on learning events or learning activities as stated by Gagne, Briggs and Wagner [2]. The aim of using the learning events was to avoid a direct instruction presentation. The presentation of materials through texts and pictures was not merely transfer of knowledge which made the students passive receivers of the message. A course book was designed to support learning, which was constructivist and aimed at helping the students explore topics and generalize knowledge. The principles of learning activities in writing a course book were: (1) it attracts the students' attention, (2) it delivers the goal of instruction, (3) it activates the students' prior knowledge, (4) it presents the contents of instruction, (5) it gives guidelines to learn, (6) it gives opportunities to perform, (7) it presents feedbacks, (8) it evaluates, and (9) it provides tasks to encourage transfer and retention of knowledge.

Learning message theory had a great impact on the implementation of the principles of motivation, memory, perception, and concept learning. The principle of motivation was implemented through the attractiveness of the book cover. The book cover design reflected the contents of the book and gave positive impression to the students about the contents. Not only the book cover, the principle of motivation was also applied to the giving of examples related to abstract material, clarity and relevance of pictures, and presenting interesting, challenging, and suspenseful topics. The principle of memory was implemented through presenting concrete messages, repetition of difficult materials, concept, principle, and procedure implementation practices. The principle of perception was implemented through varying word or phrase shapes such as bolding, underlining, using different fonts, changing letter color, and giving description to pictures to help perception. The implementation of the principle of concept learning was done through presenting easier concepts first before difficult ones, using examples and non-examples, using varied examples and using the characteristics of examples and contrary non-examples.

Second, the implementation of a course book in the class follows lesson study approach and this also influenced the effectiveness of the course book in improving the students' learning achievement. In the do stage, the model lecturer and the lesson study team made course program units, handout, and student worksheet. In course program units it was set that project based instruction will be used as the instructional model in implementing the course book, the use of test assessment, and project assessment. In the do stage, the course book was used in the project based instructional model and was designed for four meetings. It turned out that the use of the project- based instructional model had a positive impact on the students' process and result.

Through this instructional model, the students were required to produce authentic products. This requirement made the students feel challenged to do the task since the products that they were going to produce were not only useful for them but also for other people , especially for schools. The choice of project-based instructional model was supported by the result of the study done by Memisoglu that shows that a project-based instruction can help the students to access information, improve understanding, and ability to practice compared to the traditional instruction. Thus, the choice of project-based instructional model in implementing a course book is relevant and can improve the students' learning achievement [12].

During the implementation of the course book, the interaction in learning went in multi-directions. The interactions that occurred were between students and their fellow students, students and the lecturer, students and the course book and even between students and experts. The occurrence of these interactions were caused by the reflection at the end of every instruction in which the lesson study team gathered to reflect (see) to improve learning. The model lecturer as the instructional leader could improve herself and improve the instruction for the next meeting. The presence of authentic tasks also encouraged the students to make interactions since the tasks had to be done cooperatively and collaboratively with peers and related parties such as schools.

Within four meetings there was an improvement in the students' participation. The students started to be brave to ask questions, answer questions, do dialogues, share roles, and do the tasks that were assigned which they were responsible for.

Psychologically, effectiveness could be influenced by the student's interest in the instruction. An inspiring, interactive, joyful, challenging and motivating instruction is the instruction expected by students. Developing such kind of instruction was done through planning, observing the implementation, and reflecting, all of which were done by the lesson study team to improve the weaknesses so that the next instruction was better than the previous one. The lesson study process was done at the course book implementation

stage and could develop an interesting instruction for the students that they did not feel disturbed with the presence of the observer.

The lesson study process gave a positive effect on the model lecturer. It turned out that the reflection in every meeting done the lesson study team could improve the model lecturer's skill. The lecturer became more open to inputs given by the observer and could cooperate better with colleagues in facilitating the students in building their knowledge. Indirectly, the activity has contributed to the optimization of the use of the course book in instruction. Thus, the lesson study activity becomes an approach to encourage a lecturer to become more professional and this has an impact on educational quality in a wider scope.

IV. CONCLUSION

The course book was developed using Hannafin and Peck's model (1987) which was using lesson study approach. The validity of the course book in terms of content, media and design fell into category Good. The same is true for the result of evaluation by the students at the time of individual evaluation, small group evaluation, and field evaluation that showed that the quality of the course book falls into category good. The implementation of the course book in instruction using lesson study approach turned out to be effective in improving the students' learning achievement.

The findings of this study are that (1) the presentation of instructional messages using texts and pictures facilitated and speeded up the student's interpretation, retention, and transfer of knowledge by the students rather than when only texts were used; (2) The instructional design in the course book played a role in creating constructivist learning material so that it did not put the students in a message passive receiver role and (3) the implementation of the course book using lesson study approach had a positive effect on the students and the lecturer because the reflection activity became the reference by the model lecturer in improving the instruction so that the students were facilitated well in developing attitude, knowledge and skills.

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Online Code Engine to Support Programming Classes: A Case Study

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***Abstract*—multi-user applications that can help in learning subjects are now increasingly popular, especially web-based applications. However, the system load will increase as the number of connected users at the same time increases especially in applications that require more usage resources. Therefore, it is important for the system to implement client-based processing in similar applications. This paper discusses how a system that applies client-based processing is built as needed to address the problem. This system is a learning management system that has some features to learn something, that is programming language system, in this case. The developed system consists of interlinked web and desktop applications that have been tested and show favorable results in terms of usability and user response.**

Keywords—learning management system, online compiler, client-based processing

I. INTRODUCTION

Informatics Engineering Education Department (PTI) of Ganesha University of Education (Undiksha) has a focus on giving their students the skills of engineering and informatics education. One of them is skill of programming language. In this department, programming languages taught in several courses such as Programming Basic, Algorithm and Data Structure, Object Oriented Programming, Introduction to Artificial Intelligence, and Expert System and Decision.

Although programming is an important skill, this course is very difficult for students to learn. This is the fact that we got after distributing some questionnaires to the students of Informatics Engineering Department of Undiksha on February 9 and 17, 2017. From 30 respondents, 100 percent said that the programming course is a difficult course.

Based on that fact, we decided to create an application to support the programming class in the hope of making programming lessons easier and more convenient. We create an app package that allows instructors to share programming source code with students. In addition, the students will get some features that can help them in learning programming like writing code, compiling directly, and running it online. Based on this idea, there are several research references such as a researchby Patel entitled "Online Java Compiler Using Cloud Computing"[1].In the research, the author created an online compiler for Java programming language by using Cloud Computing Architecture. A remote server used to process the user's source code, so users did not requireinstalling compiler in their machine. Another study such as in[2], which has similar concepts to the research done by Patel. The different is in this study, the authors used parallel processing to execute code and support C, C++, and Java. In[3], authors created an Android application that allow user to learn and code in pascal programming language.

From the research described earlier, we can see that they use the server as the main unit to perform all processes. With this approach, the server will experience a lot of workload when the connected user count increases. The toughest process that will overload the server is in compiling and executing user code. This issue has been discussed in [2] to cut the server workload by dividing it using parallel processing. In this paper, we use different idea to solve the problems by developing an online application with a desktop client-based processing package. With this approach, the server will not be much affected by the number of the connected users.

In addition to research references, there are several applications similar to our application, such as *W3School*, *Code Academy*. These websites are focused on lecturing to students about programming languages. In this paper, we propose an Online Code Engine to support programming classes that focus on the technical features that can be utilized by users in the programming languages learning.

II. LITERATURE REVIEW

A. *Node.JS*

Node.js is a server-side platform built into the Google Chrome JavaScript Engine. Node.js was developed by Ryan Dahl in 2009. Node.js is a platform built in the Chrome JavaScript runtime to build fast and scalable network applications easily. Node.js uses an event-driven I / O model, which makes it lightweight and efficient, perfect for real-time data-intensive applications running on distributed devices. Node.js is an open source, cross-platform runtime environment for developing server-side and networking applications. The Node.js application is written in JavaScript, and can be run in the Node.js runtime in OS X, Microsoft Windows, and Linux. Node.js also provides a diverse library of JavaScript modules that facilitate web application development using Node.js for the most part [4].

B. *Electron*

Electron is an open source library developed by GitHub to build cross-platform desktop applications with HTML, CSS, and JavaScript. Electron accomplishes this by combining Chromium and Node.js into one runtime and the app can be packaged for Mac, Windows, and Linux. Electron allows you to create desktop applications with pure JavaScript by providing a runtime with native API (operating system) rich. This does not mean Electron is JavaScript that binds to a graphical user interface library (GUI). Instead, Electron uses the web page as their GUI, so you can also see it as a minimal Chromium browser, which is controlled by JavaScript. So all electron applications are technically running web pages in browsers that can utilize your OS API[5].

C. *MongoDB*

Mongo DB is an open source database that uses document oriented data model. MongoDB was one of several types of databases that emerged in the mid-2000s under the NoSQL banner. Instead of using tables and rows as in relational databases, MongoDB is built on collections and document architectures. The document consists of a set of key-value pairs and is a basic data unit in MongoDB. Collections contain documents and their functions as equivalent relational database tables.

Like other NoSQL databases, MongoDB supports dynamic schema design, which allows documents in collections to have different fields and structures. The database uses a document storage format and data exchange called BSON, which provides binary representations of JSON-like documents. Automatic *sharding* allows data in collections to be distributed to multiple systems for horizontal scalability when data volumes increase [6].

D. *Socket Programming*

A socket represents a connection between two software (point-to-point connections) called. More than two pieces of software can communicate with client / server or distributed systems using multiple sockets. For example, many Web browsers can simultaneously communicate with a single Web server through a group of sockets created on the server.

Socket-based software usually runs on two separate computers on the network, but sockets can also be used to communicate locally (inter process) on a single computer. Two-way socket, meaning that both sides of the connection are able to send and receive data. Sometimes an application that initiates communication is called a "client" and another "server" application[7].

III. Analysis And Design

In software development, RAD (rapid application development) is a concept that was born out of frustration with a waterfall design approach that too often resulted in products that were out of date or inefficient by the time they were actually released. The term was inspired by James Martin, who worked with colleagues to develop a new method called Rapid Iterative Production Prototyping (RIPP). In 1991, this approach became the premise of the book Rapid Application Development [8].

In this research, RAD is implemented to develop the application. The RAD concept is followed by separating several steps including:

1. Business Modeling
2. Data Modeling
3. Process Modeling
4. Application Generation
5. Testing and Turnover

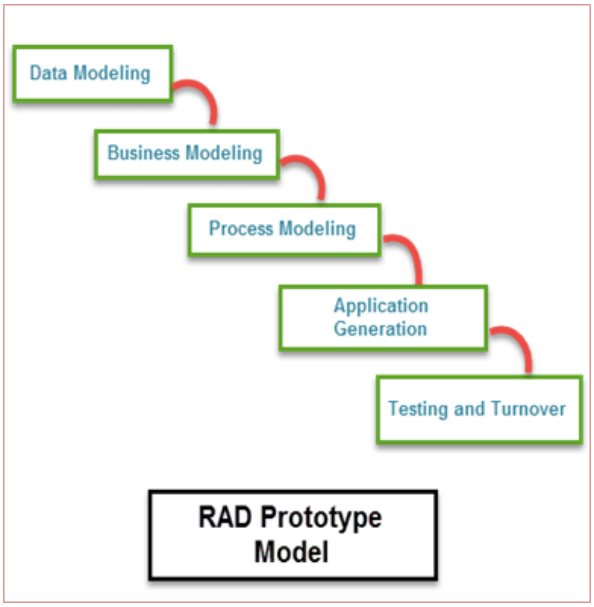


Fig 1Rapid Applications Development Schema

IV. Implementation And Testing

A. *Software Analysis*

In this section, the authors looked at some reference apps and discussed with lecturers who taught programming classes about what they had done before to provide input so that the information systems created could actually support learning in the programming class. Authors have also distributed questionnaires to students and lecturers to draw conclusions about the required software specifications and features that can accommodate the management of the programming languages to use, courses, source codes, users, and forum.

B. *Functional Model*

In functional model, the authors apply it using Use Case Diagram. A use case is a methodology used in system analysis to identify, clarify, and organize system requirements. The use case is made up of a set of possible sequences of interactions between systems and users in a particular environment and related to a particular goal. It consists of a group of elements (for example, classes and interfaces) that can be used together in a way that will have an effect larger than the sum of the separate elements combined. The use case contains all system

activities that have significance to the users. A use case can be thought of as a collection of possible scenarios related to a particular goal; indeed, the use case and goal are sometimes considered synonymous[9].

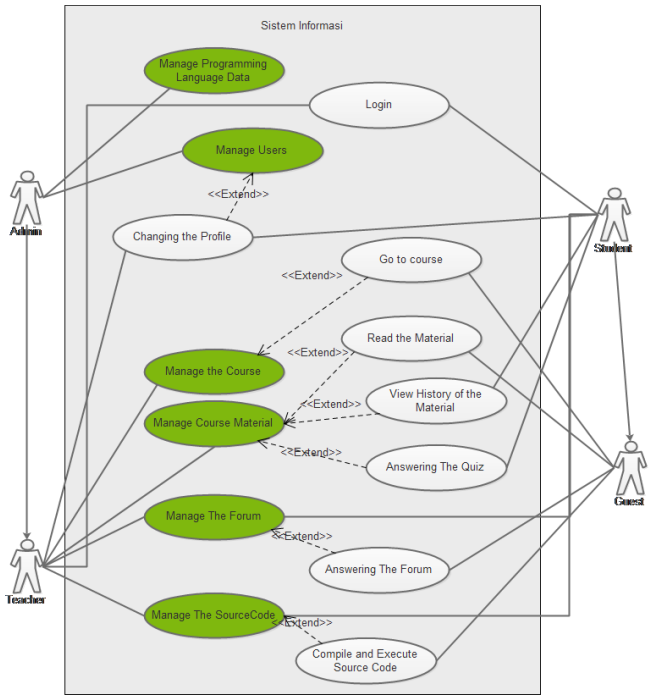


Fig 2. Use Case

C. ERD

An entity-relationship diagram (ERD) is a data modeling technique that graphically illustrates an information system's entities and the relationships between those entities. An ERD is a conceptual and representational model of data used to represent the entity framework infrastructure.*[10]*The ERD of our application shown at Fig 3.

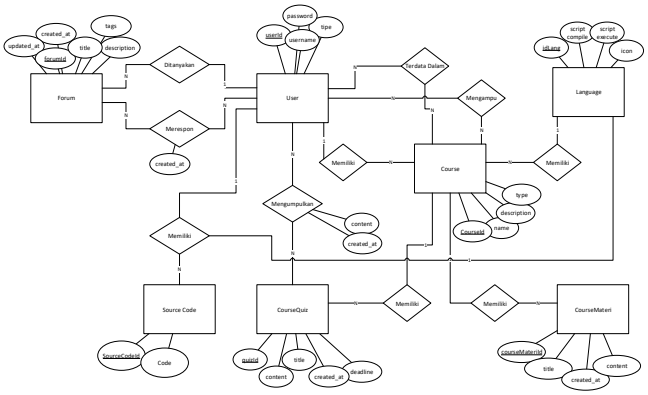


Fig 3. ERD

D. Data Structure

A data structure is a specialized format for organizing and storing data. General data structure types include the array, the file, the record, the table, the tree, and so on. Any data structure is designed to organize data to suit a specific purpose so that it can be accessed and worked with in appropriate ways. In computer programming, a data structure may be selected or designed to store data for working on it with various algorithms.

The data structure was implemented by using MongoDB that shown in Fig 4.

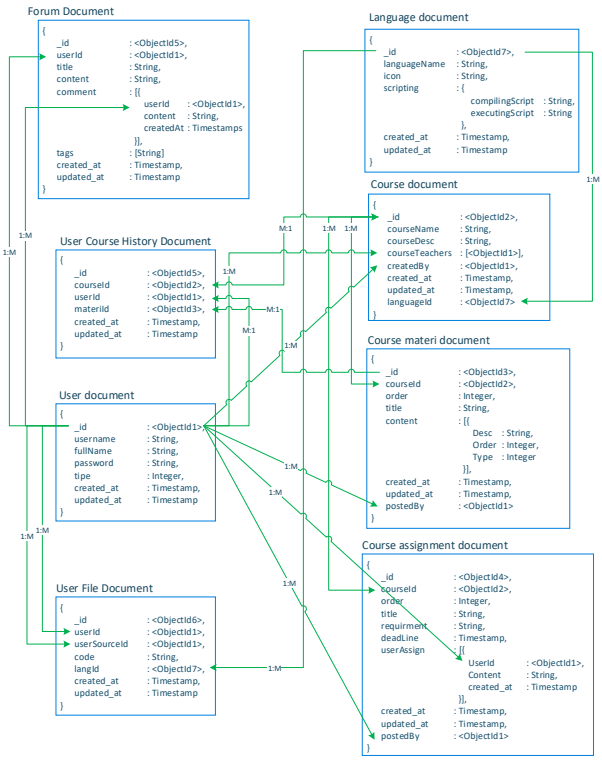


Fig 4. Data Structure

E. System Architecture

The focus of the research is to build a system with a minimized server load by using client based processing in some processes. The system consists of two separated applications, a desktop application and a web application. Auser will open the desktop application that will receive tasks from the web application.

While desktop applications run on user PCs, users are allowed to write code on web pages. The web page will display a command prompt for the user. This section will show how the code that has been created successfully executed. When a user completes a program code, the code will be sent to the user's PC through an initiated server connection at the beginning and a compilation of the program will be performed and execute it on a desktop application running in the tray system and the results will appear on the web page..The system architecture of the applications is depicted in Fig 5.

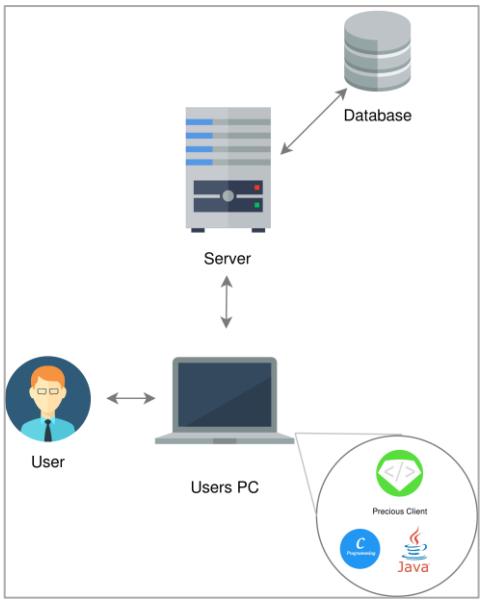
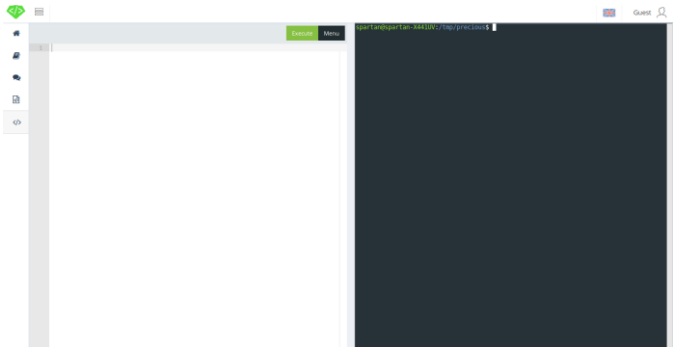


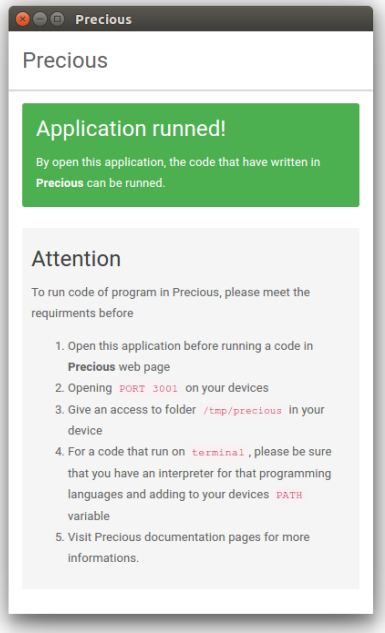
Fig 5 System Architecture

F. General Information

The concept of the system is to create a medium that allows users to share programs managed by instructors and learned by students. Users are also allowed to post topics to forums, write and execute code, and manage their code. The study also has a focus on implementing client-based processing to reduce server load on some processes. In this case, the authors apply it to compile and run the user code. Users will interact with the system using the website while the desktop application is opened in the user's PC by the system service running on the user tray to help the web application process the code. The main idea is to run the user program code (compiling and executing) shown in the web application. At the same time, it will also reduce the process that occurs on the server by using a client-based processing using the desktop application that run as a system tray application. Before the client runs the desktop application, it must have the compiler installed correctly and added to the path variable, so the desktop app will be able to call it to process the code. For e.g. if a user wants to execute Java in the web application, the user's PC must have JDK installed. Up to the current version, the system is capable of processing programming code that runs and outputs in a console as well as a web-based program that is related to HTML or Javascript. The system has not been able to process a GUI type of applications yet. The website and the desktop applications, which are part of the system are related apps. Therefore, they must remain opened at the same time to make all features run.



(a)



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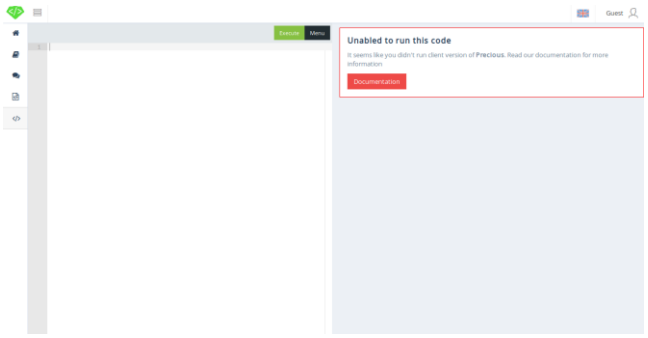

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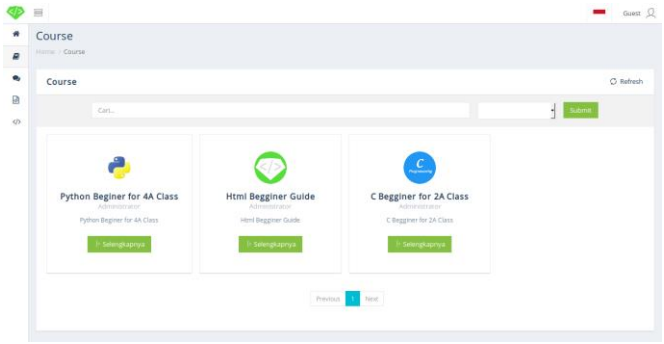

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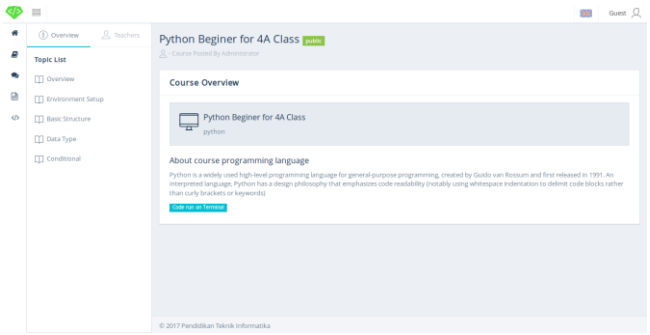

(e)

Fig 5 Implementation Preview
(a) Code Editor Page Implementation, (b)Desktop Application Preview, (c)Editor Page on Error, (d) Course Lists Implementation, (e) Detail Course Implementation

G. **Software Testing**

Software testing that had been done is White Box testing, Black Box testing, Media Expert testing, Usability testing, and User Response testing. The goal of White Box testing is to test the algorithm of the system's code for several scenarios by using *basis path* testing.

In the *basis path* testing, there are several steps. First, the code that is going to be tested has to be numbered as shown in Fig 6.

```
1 module.exports.store = function(req, res){
2    var data  = JSON.parse(req.body.data);
3    data.Icon = req.file.filename;
4    Language.create(data, function(err, user){
5       if (err){
6          res.send(err);
7       }
8       else{
9          res.send('1');
10      }
11   });
12 }
```

Fig 6 Numbered code

After the code was numbered, a flow-graph was then created based on the code that shown in Fig 7.

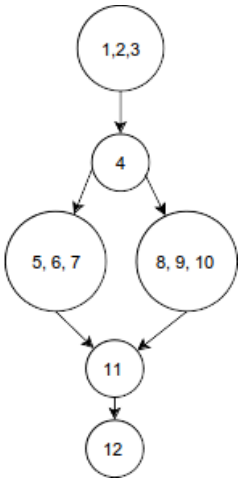

Fig 7 Flow-graph result

From that flow-graph, the Cyclomatic Complexity by using the following hree formulas.

$$V(G) = \text{edges} - \text{nodes} + 2$$
$$= 6 - 6 + 2$$
$$= 2$$

By that formula, the number of the Cyclomatic Complexity of this code was equals 2, which mean there are two possible routes or cases from that algorithm. By using this result, the code was tested by presenting various input so the code is run through every case.

From the White Box testing that was done, the algorithm that is implemented in the application code was considered appropriate. Black box testing is to complete functionality testing by using boundary analysis for all the form validation in the web application.

After testing White Box and Black Box finished, the system is then tested with the help of experts in the field of programming is done mainly in accordance with the content and workflow validity. This system is tested by several lecturers specializing in programming lectures and by the head of the information and communication technology department in Undiksha. From the results, there are some revisions, especially on the part of web applications. The last test conducted on the users who are the actual lecturer of some programming classes and some students of the Informatics Engineering Education Department of Undiksha by using questionnaire.

Usability test results show 91% in terms of learning ability, 89% efficiency, 85% memorability, 85% error-free, and 89% satisfaction. Therefore, the total usability test results is 87% which means the application is good enough to be implemented. The author also gets 95% overall for the user response testing.

V. CONCLUSION

The system developed in this research is used to support the programming class. In this case, applied in the Department

of Informatics Engineering Education in Undiksha. This system can help users learn the programming language more comfortably and has many features that make it easy for users so that users can focus more on coding such as writing code, executing it and maintaining it. The system also provides some helpful features such as forum and a feature to share program code snippets with other users. The client-based desktop application that has been developed can also reduce the server load significantly, so the server is not easily stuck because of the growing number of users and reduce the possibility of users damage the stability of the system in executing malicious programs that harm the system because the compilation and execution occurs on the user's computer.

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Genuine Involvement In Continuous Professional Development:

How To See It?

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***Abstract*— This article presents the synthesis on how genuine involvement in Continuous Professional Development (CPD) can be predicted. This synthesis derives from the findings of a phenomenological study involving in depth interviews toward 12 English teachers in Indonesia. Teachers are very often justifying their professional development by submitting in documents clarifying their professional development participation. However, the study found that the frequency of professional development participation is not the best way to see their genuine involvement. The study suggests that teachers' professional enthusiasm, i.e., professional motivation, perceived impact of CPD and sustainability effort, can be considerably important component to predict their genuine involvement. Research implications regarding the evaluation on teachers' professional development are also highlighted.**

Keywords*— CPD involvement levels, professional enthusiasm, genuine CPD involvement

I. INTRODUCTION

Teachers have been expected to be professional. This professionalism is identified not only by their holding on a professional teacher certificate but more by their attitude toward their work. Researches around the world have found how professional attitudes influence the way teachers do their job in practice [1], [2], [3], [4] In Indonesian context, teachers' professionalism is measured by teachers' knowledge competency test (locally known as UKG) and teachers' performance test (locally known as PKG). The results of this two tests have been analyzed as having great discrepancy. The first has been far below the expected standard [5] and the latter has been excellently achieved [6].

PKG or Penilaian Kinerja Guru (teachers' performance assessment) is assessed by school principals, senior teachers or external-school assessors to assess teachers' teaching performance. They are required to observe a teacher teaching his class and write report about his teaching practice based on the provided indicators. Despite the low achievement on knowledge competency, many teachers are assessed to be excellent in their teaching practice. It is suspected that these difference lies on the failure on the assessment of teachers' practice which is done by principal or senior teachers assigned by the principal. It is believed that the result of PKG is largely based on the assessor's assumption and not based on indicators as determined by the government [6]. Besides, colleagues' subjective judgment or *ewuh pakewuh* culture, as in cause no harm toward other's career, may cause why PKG result does not reflect teachers' real professionalism [7].

In addition to PKG and UKG, Indonesian teachers' professionalism is also measured by the extent of professional development participation. Practically it is done by having teachers submitting their professional development portfolio containing documents of their professional development engagement. This portfolio is later used as a document to support their career level advancement proposal.

The result of the phenomenological study from which this article derives has been reported previously. It appears that teachers have 6 levels of CPD involvement which are influenced by teachers' CPD participation and teachers' professional enthusiasm [4]. Thus, submitting portfolio containing evidence of participation may not be sufficient to predict teachers' genuine involvement. This article further elaborates on the indicators of CPD involvement level briefly reported in previous publication [4] and the synthesis on how to see genuine CPD involvement.

II. THEORETICAL REVIEW

A. The notion of teacher professional development

The term professional development actually has various terminologies. In fact, professional development may be called with different names in different school such as lifelong education, staff development, in-service training, professional learning, continuing education and Continues Professional Development or CPD [8] However, despite these various terms, it has a shared function to improve teacher's performance in doing their work which consequently help students to improve their learning quality and achievement.

Rejecting training-focused notions of teacher preparation, teacher development is increasingly seen as a continuing process which does not stop after initial qualification but continues for as long as a teacher in the profession. Hayes in [9] mentions that the term for professional development has been evolved from the term INSET or in-service teacher education training to ongoing or continuing professional development. The term which is currently found more widely is CPD or Continues Professional Development.

Teachers' perceptions of what activities constitute professional development is frequently limited to attendance at courses, conferences, often to meet national requirements. Professional learning, or "on the job" learning is regularly seen by teachers as separate from professional development, and something that is just done as part of the job [10]. Meanwhile, some scholars [11], [12], [13] believe that even exchange conversation or interaction between teachers about their problem in class or the new strategy they used recently and other topics of teaching and learning is a valuable professional learning

Professional development may be either initiated by schools administrator or people with educational authority or by the teacher themselves. [8]defines professional development as the efforts initiated by schools and school districts to have teachers engage in professional development activities. Unlike [8], Day in [14] emphasized that the efforts are not solely initiated by schools and schools district, but also teachers as individuals. Day's definition in [14] also clears up confusion on putting formal training and on-the job learning separately from professional development. Day's definition of professional development covers all aspects of the notion:

> "Professional development consists of all natural learning experiences and those conscious and planned activities which are intended to be of direct or indirect benefit to the individual, group or school, which contribute, through these, to the quality of education in the classroom. It is the process by which, alone and with others, teachers review, renew and extend their commitment as change agents to the moral purpose of teaching; and by which they acquire and develop critically the knowledge, skills and emotional intelligence essential to good professional thinking, planning and practice with children, young people and colleagues throughout each phase of their teaching lives." [14, p.4].

Thus, professional development is not only limited by formal meetings where scholars gathered to share ideas but can include a very informal talk between colleagues or personal reading. In short, professional development is any educational experience which related to an individual's work which help to improve their professional growth. These experiences may be either initiated or organized by educational authority or by the teacher themselves.

B. Factors Affecting CPD Involvement

Despite the findings of previous studies about the positive impact of professional development on students achievement and teacher practice quality [15], [16], [17] not all teachers participate in professional development activities. Lie's study [18] reveals that many Indonesian English teachers are not able to join in professional development program due to the overload work at school, low salary, other side jobs and low motivation to enhance professional development.

Accordingly, factors that hinder teachers to attend professional development activities also found by some studies. These factors are extra workload, insufficient time, absence of incentives in professional development trainings, theoretical oriented program, family responsibilities, teacher's conservativeness, lack of awareness regarding usefulness of training and conflict with teachers working schedule [19].

Participating in professional development is motivated by some factors such as to get certificate [19], [20] self-motivation, family support, supporting school culture, [1] freedom to pursue their education and implement their own project and freedom to participate in different professional networks and collaborative groups (e.g., local schools) [21]. In addition, the majority of teachers participate in professional development for the sake of getting certificate of participation [19], [20].

The review on the literature indicates teachers' CPD participation is motivated by many factors as mentioned above. However, studies have not sufficiently provided ideas to identify teachers' genuine CPD involvement.

III. METHOD

This study was approached qualitatively. Specifically, it took a phenomenological approach, which emphasizes the understanding of the subject' or participants' perspective [22].

In collecting data, 12 English teachers were interviewed through 5 months developmental interviews, as [23, p.105] has termed "the Non-Scheduled standardized interview". These teachers were selected purposively for their heterogeneous CPD experience. In addition, document checking, colleague checking, and member checking were also conducted to triangulate the data.

All data were interpreted through content analysis. The interviewed were transcribed, and followed by data reduction, coding processes, data analysis, and interpretation.

The study predetermined 5 CPD types to be studied: PIL (Personally-initiated Learning), OPD (Organized Professional Development), PIW (Publishing/presenting Innovative Work), UPQT (Upgrading Qualification into more Professional Teacher) and MAR (More Advance Role).

PIL involves personal reading, pursuing knowledge from more expert peers/people, learning from observing other teacher's teaching, developing material for teaching, lesson planning, developing syllabus, learning from self-evaluation or others' evaluation, etc. OPD involves attending workshop,

PLPG, seminar, training, school professional development, MGMP meeting, etc. PIW involves Publishing article, journal, research result report, course books, worksheet, modul, text book, inventing new discovery of efficient technology, developing innovative learning or teaching media, developing standard or test items used in national or province level, etc. Furthermore, UQPT is indicated by holding professional teacher certificate or holding S2 or S3 certificate. Lastly, MAR involves becoming a teacher trainer, senior teacher, instructional designer, test developer, material writer or mentor

Teachers' CPD participation was largely measured by recording their participation and categorized them into these 5 predetermined CPD types. Then their participation were categorized into high, mediocre and low CPD participation based on the frequency of their participation.

IV. FINDINGS AND DISCUSSION

A. Findings

As it has been reported in previous publication [4] there are 6 categories of CPD involvement levels found. These categories are: High CPD participation and High professional enthusiasm (HH), High CPD participation and Low professional enthusiasm (HL), Mediocre CPD participation and High professional enthusiasm (MH), Mediocre CPD participation and low professional enthusiasm (ML), Low CPD participation and High professional enthusiasm (LH) and Low CPD participation and Low professional enthusiasm (LL).

The study suggests indicators affecting these CPD involvement level. These indicators are CPD participation and professional enthusiasm, i.e. professional motivation, CPD perceived impact and sustainability effort. CPD participation can be categorized into high, mediocre and low depending on the extent of the breadth and frequency of professional development participation. Meanwhile, professional enthusiasm can be categorized into two broad levels: high and low. This is identified by looking at teachers' professional motivation and teachers professional attitude which involves the way the teachers see the impact of their professional development engagement and the way they sustain their CPD efforts.

With this finding, it is obvious that teachers' CPD involvement is not only affected by CPD participation. Teachers with certain level of CPD participation may have either high or low professional enthusiasm. Similarly teachers with certain level of professional enthusiasm may have high, mediocre or low CPD participation level. During the study, the need to answer the question about which of these two components a better indication of CPD genuine involvement, had been increasingly significant. The content analysis toward the interview sessions indicated that professional enthusiasm level surpass CPD participation level in indicating teachers' genuine CPD involvement.

B. Discussion

The study found that teachers' prevalent CPD participation were on PIL, OPD and UQPT. They reported their personal learning as the most feasible efforts to improve their professionalism. Their PIL activities limited to reading the text book they use for teaching, browsing information through the internet related to teaching strategy, games ideas, and other classroom activities ideas. Very few of them enjoyed reading article based on research result, since they see it do not help much in classroom practice. In fact only one teacher had experience in enrolling online course. Most teachers being interviewed reported their participation on attending workshop or seminar organized by school or certain institution.

The study suggests that active PIL participation, i.e. personal reading, doing research, joining online course, learning from various resources, PIW participation, i.e. publishing article, presenting ideas in conferences, and MAR participation, i.e. becoming a guest speaker, a teacher trainer, or instructional designer, are commonly indications of high professional motivation because these behaviors are extremely self-determined. Regarding self-determination theory, [24] states that self-determined behavior is determined by internal locus of causality. On the contrary, active participation in OPD and UQPT are more externally-determined. Thus, active participation in this type of CPD may be caused by external parties such as regulation, principal's assignment, professional development provider invitation, etc.

The analysis shows that teachers with high professional enthusiasm tend to have higher participation in terms of PIL, PIW and MAR compare to those with low professional enthusiasm. This is understandable since these three types of CPD need a considerable amount of time, energy and willingness. Teachers with low professional enthusiasm prefer to participate in professional development which is not self-determined such as attending school workshop, or training due to principal assignment. Besides, these teachers mentioned their unfavorable attitude toward the activities such as their refusal to participate fully during the program as in leaving out the workshop room before it ended, or refusing doing the workshop's tasks because they think it is pointless.

In other study by [1], PIL, as it is termed as self-directed learning in their study, is also become the preference of English teachers in Syria and Pakistan due to the scarcity of available professional development activities. Unlike this reason, the subjects of this study reported PIL preferences as it is the most feasible way to do professional development activities for their heavy workload which echoes Lie's finding in [18].

Teachers' huge burden has been an issue in Indonesia, especially with the regulation no 14 year 2015 which requires professional teachers to have a minimum 24 teaching hours. Teachers expressed their pessimism to leave schools for more time-consuming PD activities. In fact, their OPD participation was hardly their own initiative. They would rather stay at the school and finish their administrative obligation. Besides heavy workload and limited time, family responsibilities is also identified as factors which often inhibit their participation.

These findings reflect accordingly what previous research [25], [19], [1] discovered.

In addition to PIL and OPD, most teachers also participated in teacher certification program that required them to be active in various professional development activities. Most teachers expressed their urgent needs of having many certificate of attendance to fulfil this requirement and put so much effort in order to fulfilling it.

The analysis on teachers' motivation of their CPD participation indicates that teachers can be motivated by various things, such as learning desire, effective teaching satisfaction, reward/financial advantage, career advancement opportunities and government regulation fulfilment. Teachers with high professional motivation such as learning desire and effective teaching satisfaction displayed positive perception regarding the impact of their professional development experience. They also sustained their effort on enhancing professionalism. For instance, they apply concept of teaching they learned in certain training in their classroom, they modify teaching techniques that they found from reading resources or they continue attending certain professional activities regardless the absence of incentive.

On the contrary, teachers with low professional motivation, motivation other than improving professionalism such as to improve career position, to get reward, or to fulfil government regulation, displayed less excitement in sharing what positive impact they earned from their professional development participation. Besides, they were inclined to discontinue their professional development efforts. For instance they don't have the need to attend seminar anymore once they have earned professional teacher certificate. Besides, teachers with low professional motivation see participating professional development activities as a way to achieve something else. One teacher reported that he had once fabricated a research for the sake of participating in research writing competition. This kind of attitude certainly does not represent the purpose of doing research as professional development which is supposed to enhance teachers' personal and professional growth as they gained insight from the research they are doing [26].

Motivation to do professional development, or as it has been termed as PDM by [27] has been considered as an important aspect in scrutinizing teacher's professional development [28], [29]. Not all professional development participation is motivated by professional desire. Some teachers participate in professional development program without true learning motivation. This is most likely why their professional development participation hardly triggers professional learning.

The interview analysis reveals that professional learning yields from CPD participation which is motivated by the intention to improve professional practice. [30] and [31] agree with such disconnection that professional learning is not a direct result of professional development. This kind of disconnection may be caused by the program factor, as the ineffective implementation of the program [1],[25]and person factor, as in low enthusiasm and motivation [32].

Teachers' genuine professional development involvement is the one that stimulates learning and enhances teachers' professional growth. Thus, to see it ones should know what motivation teachers have underlying their action of professional development engagement. Besides, one can see from their professional attitude, the way they appreciate positively the benefit or impact of their professional development involvement or their continuous efforts to improve their knowledge and practice quality.

The study suggests teachers' professional motivation and professional attitude as indications of teachers' professional enthusiasm. The term *professional enthusiasm* in discussing professional development involvement has been mentioned in other literatures by other terminologies which essentially suggest similar meaning. For instance, Day in [14] states that 'CPD is essential if teachers are *committed* and *enthusiastic* about their work' (P.221). Furthermore, [33] mentions about *professional attitude* as personal factor which is more significant in predicting teachers' CPD involvement compare to task factor and work-environment factor. Kwakman's finding in [33] is reflected in the finding of this study. Professional attitude, as indicated by teachers' positive perception on CPD impact and their sustainability effort in this study, is considered to be essential in examining teachers' CPD engagement.

Based on the result of analysis, teachers with high professional enthusiasm were inclined to have positive perception toward their professional development experience and more sustained CPD efforts. Teachers with positive perception on the impact of CPD toward their practice expressed their experience of applying the learned concept in their teaching practice. They prepared their class enthusiastically as in selecting material or browsing for more classroom activities ideas, every time before teaching. Similar finding was found by [3]. They found positive correlation between job satisfaction and teachers' positive perception of their professional activity.

Meanwhile, teachers with high CPD participation did not always express similar positive perception regarding the impact of CPD. These teachers may find professional development participation pointless regardless their pursuit on professional development opportunities. Hence, high professional enthusiasm level is an indication of genuine professional development involvement. On the contrary, teachers' CPD participation level alone should be considered with caution as an indication of teachers' genuine CPD involvement. Teachers may have various motivation beyond improving their own professionalism.

Although CPD participation level and professional enthusiasm level, are both indicators affecting CPD involvement; these two are mutually exclusive. They are independent to each other. CPD participation level does not influence professional enthusiasm level. A teacher may have various CPD experiences and high frequency of CPD participation, but this may not indicate that he has high professional enthusiasm. In fact, he may turn out to have low professional enthusiasm.

Similarly, high level of professional enthusiasm may not directly an indication of high CPD participation. A teacher with high professional enthusiasm may have experience in some types of CPD based on his preferences and choose not to participate in other types of CPD because of lacking in interest. This way, his CPD range of experiences may not as high as those teachers with lower professional enthusiasm who participate in all CPD types to achieve their personal goals.

V. CONCLUSION

When a teacher has high CPD participation, one normally assumes it is derived from high professional enthusiasm. However, this study suggests that even teachers with high CPD participation may have low professional enthusiasm which cause them to have less genuine involvement. This is so, because they do not participate in professional development for the sake of doing the action but for other reasons than the action. When a teacher comes to a seminar and has something else in mind other than learning from the seminar, professional learning is not likely to happen.

Evaluation on teacher professional development should not overrate teachers' CPD participation frequency, but should rather consider the affective factors such as teachers' enthusiasm and motivation underlying their CPD engagement. Thus, regulatory bodies should find a way to identify the extent of teachers' professional enthusiasm in evaluating their CPD involvement. This may be done by continuous observation toward teachers' attitude and enthusiasm. School should be a place that provides professional enthusiasm atmosphere which may motivate teachers to enhance their professionalism genuinely. More importantly, school administrators should be aware of teachers' professional enthusiasm level since teachers' professional attitude is mostly observable at schools.

In addition, this study also suggests the need to nourish professional enthusiasm such as professional attitude and motivation to teacher candidate in any teacher preparatory colleges. Teacher candidates should be taught about being teacher as a professional choice and all of its consequences.

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Evaluation of Football Coach Competence of Early Age in Football Schools

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***Abstract*—This study further highlights the competency of football coach of early age. The method used in this research are mixed methods. Based on the analysis of quantitative and qualitative, then the results are : 1. *Context Evaluation*. Analysis reveals that the variable scores of coach presence in the count of 61.66% 2. *Input Evaluation*. Analysis shows score of 53.03% variable of human resource of the academic coaches. 3. *Process Evaluation*. Analysis the description of the evaluation process, it includes: competence of development character 59.69%, motivation competence 55.00%,technical competence 53.51% and competence of games strategy 50.00% . The analysis of SEM through approach Partial Least Square (PLS) is known from the value of R-square (R^2), for character development competence (X_1) 0.7549, competence of motivation (X_2) 0.6844, technical competence (X_3) 0.7805 and competency games strategy (X_4) 0.7572. Shows that all indicators represent variables of coach competencies which describe the significant influence, that the competence of football coach of early age has relevance. 4. *Product Evaluation*. The coach competency formula is conceptually divided into three main parts, it can be said that the standard of football coach competence of early age the capacity of attitude (*affective*), knowledge (*cognitive*), and skills (*psychomotor*).**

Keywords—competence, football coach an early age

I. INTRODUCTION

A coach is one of the indicator of success of the athletes to reach optimal performance, so when viewed from the achievements of Indonesian football team over the last few years in most of the official multievent matches between countries, it is found out that it has not achieved optimum performance. Indonesian football teams in Southeast Asia from 1996 to 2004 had never succeeded in reaching the Tiger Cup champions. Then in 2007 until now, since the Tiger Cup turned into AFF Suzuki Cup (Asean Football Federation Cup) Indonesian football team has never succeeded in reaching the champions. During the participation of Indonesian football teams at the Association of Southeast Asian Nations championship, Indonesia's highest achievement only reached second place in 2000, 2002, 2004 and 2010. Likewise in the event of SEA Games SEA Games (South East Asian Games) since 1977 until now for the sport of football, Indonesia only twice became the champion of Sea Games XIV SEA Games to 1987 in Jakarta and Sea Games to XVI 1991 in Manila, Philippines. Meanwhile, based on FIFA (Federation Internationale de Football Association) World Rangking of Indonesian football team achievement in 2010 is ranked 138, the year 2011 was ranked 129, while in 2012, 2013, and 2014 the overall position of Indonesia was ranked 156, 170 ,and 153 and by 2015 Indonesia was ranked 174th.

The fact mentioned above is that one of the success indicators of athletes' achievement is how the coach can spur optimum performance on trained athletes. Referring to these indicators, a question is raised on how about the competence of football coaches in Indonesia? The answer is that the optimal achievement can be encouraged if the coach has the competence that is reflected in the ability of knowledge, skills and attitude in training. Specific coach competencies have not been standardized in every sport, especially in the sport of football. PSSI Association as the parent organization that oversees the sport of football until now has not issued a provision regarding the competency standards of football coach. To support the competence of coaches in training, PSSI associates currently only issue licensing authority to train a coach, whereas the government agencies, namely the Ministry of Youth and Sports through the National Certification and Accreditation Agency of Sport (BSANK) is more functional to prepare policy formulation and implementation of policies standardization,, accreditation, and certification of sports. Similarly, sports experts and practitioners formulate the concept of coach competence more generally for sports. On the basis of several issues that exist in football in Indonesia at this time, the researcher is interested to examine more about the competence of football coaches for early- aged students..That hope has been given by the PSSI chairman Johar Arifin who says, "Football Association of Indonesia (PSSI) will seek to raise the competence of coaches for young children. That is important because right now, the coach for a young age is preferred to that for adults. With the increased competence of coaches for young age, then the young talents will be more emerging. And in ten years, the results of youth coaching will be obvious "(para 5) [1].

Based on the above description which underlies the fact that there has not been optimal football achievement yet in Indonesia, there is a need of attention to study and to investigate fundamentally the competence of coaches. This study aims to find out the competence of coach for early-aged

students of football school with CIPP evaluation model approach (context, input, process, product). The scope of this research is the emphasis on developing the ability and quality of football coaches for eary-aged students in terms of competence aspects of the coaches. The competence of the coaches to be evaluated consists of components of character development competence, game strategy competence motivation competence, and technical competence [2]. The research question formulations are as follow:

- What is the relevance of the existence of football coach for early-aged students of football school from the context evaluation aspect with the formal legality support of government and related institutions at the football school (SSB)?
- What is the relevance of the HR background of football coach for early-aged students from the input evaluation aspect of the football school (SSB)?
- How is the implementation of the assessment and the relation of the competence of a coach for early-aged sudents from the evaluation aspect of football school (SSB)?
- How is the result of the assessment process of the competence of footbal coach for early-aged students from the aspect of product evaluation that produces the standard formula of competence of football coach for early-aged students in football school (SSB)?

In particular, the results of this study will provide benefits asempirical study based on the competency standards of football coaches for early-aged students in football schools (SSB) which can be used as a basis for developing and revising the competence of coaches which consist of parts of competence that are more specific for early-aged students that ultimately they can generate policy formulation of competency standard of football coach for early-aged students which has legality from acknowledging authorized institution.

II. LITERATURE REVIEW

A. The Nature of Evaluation

The term evaluation is synonymous with judgment, which means the systematic process of collecting, analyzing, and interpretingthe data or information obtained. In general, evaluation as an action or process has at least three main functions: (1) measuring progress, (2) supporting the preparation of the plan, and (3) improving or refining (Soegiyono, 2009, p.7-8). From some existing evaluation models, the researcher will discuss the CIPP evaluation model (context, input, process, product) developed by Daniel Stufflebeam.. These four aspects include:

1. Context. The main purpose of the context evaluation is to know the strengths and weaknesses of the evaluator. Evaluators will be able to provide the necessary corrective directions related to support in planning decisions.
2. Input. This evaluation sets the decisions and determines the available resources as an alternative strategic plan to meet the needs of a program. In the input evaluation phase, the evaluator tries to reveal the data source in an effort to achieve the objectives of the evaluation program
3. Process. In the evaluation phase of the process, evaluators can reveal the extent to which the implementation of the program has been implemented in the field and assist in making decisions in implementing the planned program.
4. Product. In the product evaluation phase, this evaluation is conducted with the aim of identifying and assessing the achievement of the outcomes in accordance with the intended program objectives, so that findings can be focused on achieving program objectives to meet the needs of the target group.

B. The Nature of the Coach

Coach is one of the professions of interest compared to other professions. Many trainers love his profession, although the challenge of his profession when training is very complex, because the task of the coach is not just in the field alone but the coach is also a teacher, father, and friend. According to Setijono (2006), factually the condition of the coach has the background of former athletes and academics. Coaches with ex-athlete backgrounds have advantages in terms of skill mastery, field experience, and experience competing in the sports that he or she is involved in. While the trainers with academic background have the ability in theory, physical exercise, psychology, science and technology, and training programming.

C. The Nature of Competence

A competent trainer is a trainer who can deliver his knowledge to a trained athlete,and demonstrate techniques to his athlete, so that the athlete can perform techniques well and correctly. The competencies of the trainer will support the training tasks. The competence of the trainers according to the formulation of the results of the Sporting Seminar of the Office of the Ministry of Cooperative Affairs in 2009 are that at least the trainers must have 11 competencies, Philips devides the components of trainer competence into:1.character development competency,2. game strategy competency, 3.motivation competency and 4.technique competency [2].

Based on the concept, it is that the competence of the trainer is the competence that must be possessed by the trainer consisting of the ability in the competence of character development, motivation competence, competence of match strategy, and technical competence.

III. SUBJECTS AND METHODS

The method of this research is mixed method, that is a research method that combines quantitative and qualitative methods to be used jointly in a research activity, so that the data obtained will be more comprehensive, valid, reliable and objective [3]. Combined research method uses sequential model using sequential explanatory design which is evaluated by CIPP evaluation model approach which includes evaluation aspect: context, input, process and product comprehensively.

The research target consists of variables: independent variable, that is the evaluation of competence of trainer and

dependent variable which is the competence of fooball coach for early-aged students consisting of character competence development variable, competence of game strategy, motivation competence, and technical competence. The study population is the entire SSB coaches who are still actively conducting regular coahing activities and are recorded in the Association of East Java PSSI, while the research sample are football coaches for early-aged students in SSB registered in the Association of District / City (Askab / Askot) PSSI East Java who already have a minimum license D license of coaching under the authority issued by the PSSI Association.

The technique of data collection is using two approaches, namely quantitative and qualitative approaches. The data that become the raw material of research is primary data, that is the data obtained through questionnaires, interviews and observations.

IV. DATA ANALYSIS

A. Quantitative Data Analysis

Quantitative data analysis is done by statistical analysis of percentage description (p = f / n x 100%) and Structural Equation Modeling (SEM) analysis with Partial Least Square (PLS) approach. Stages of the model in the PLS which include:

- The structural model or Inner model in PLS describing the relationship between variables. The equation model can be written in the following linear equation: It is the coefficient of the relationship between the i-th variable and the j-path variable (path coefficient).
- The model of measurement or outer model in PLS can be defined with each indicator block associated with its variables. The reflective indicator block can be written in equation with the following simple regression: that is the coefficient loading of the variable relationship with the k-indicator being the residual or error of each measurement variable.
- Weight relation, the test value of the evaluation of the structural equation model in SEM PLS which can be known from the value of goodness of fit or R-square value (R2). The results of data processing research uses smart PLS 2.0.
- Inner Model or structural model, outer model or measurement model, and weight relation where the value of the variable can be estimated. The calculation process is done by iteration, where iteration will stop if convergent conditions have been reached.

B. Qualitative Data Analysis

Qualitative data analysis is obtained from the interview and observation which aims to complement, deepen and strengthen the quantitative data obtained from the questionnaire through data sources. Analysis of qualitative data gathered by interview using interactive model. It can be done through steps consisting of: (1) data reduction, (2) display or presentation of data; And (3) concluding and then verifying.

The interactive data model uses a matrix that starts from; data exposure, which is then grouped and collected (data collection), next reduced (data reduction) in accordance with the form of data, and eventually presented (data display) and verified with other data to find one form of conclusion.

The two data analysis studies are mixed methods using quantitative and qualitative approaches with the subject focusing on coaches for early-aged students and the location of the research is football school located in the PSSI Association of East Java.

V. RESULTS

A. Test Instruments

The results of the development of data collection instruments are in the form of questionnaires, interviews and observations. Furthermore, the research instruments are tried out to respondents and informants as the subject of trial. The result of validity test of instrument item from each component is described. Of the 80 items tested in the validity of the instrument, 25 items declared invalid statements and 55 items of valid statements. Invalid items can be used in actual research.The test results reliability instrument items can be seen in the following table.

Based on the description of each of the above variables, it can be stated that the instrument item has a validity value above 0.44 as many as 55 items and reliability value of all items above 0.60 to 0.70. This means that the instrument has fulfilled the validity and reliability, so they can be used in research. After the fulfillment of the validity and reliability value of research instruments, the process of data retrieval can be carried out through the stages of the dissemination of questionnaires, interviews and observation.

B. Quantitative and Qualitatif Data Analysis

Based on the distribution of data collected from 60 respondents, then a quantitative data analysis using CIPP evaluation model is conducted which includes:

1) *Context Evaluation*
   The results of descriptive analysis on each indicator of the presence of coaches include indicators of Government support of 81.66%, PSSI Association of 70.00%. This gives illustration of the competence of coach which is of relevance to the support of government and related institutions that can be used as the legal basis of public confidence in the coach.
2) *Input Evaluation*
   The results of descriptive analysis on each HR indicator of the Trainers include the indicator of the Coach Education of 75% at least is the SMA / SMK / MA, the Training Duration of 68.33% 5-10 years and the Training License of 70.00% D license contains the understanding that the majority of coaches have the same related expectations of HR Coach.
3) *Process Evaluation*

Data distribution shows description of process evaluation of which each competency component of coach consists of the following data:

- The results of descriptive analysis of character development competence indicators include: discipline attitude of 72.22%, fair play of 53.88%, sportsmanship of 50.55% and mutual respect of 63.33% implies that the majority of coaches have the same expectations about character development through discipline, fair play, sportsmanship and mutual respect in training.
- The result of descriptive analysis of the answers to the competence indicators of the game strategy include: knowing the strengths and weaknesses of 57.22%, understanding the match strategy of 45.92% and the match situation of 48.33% containing the understanding that the majority of trainers have the same expectations about the competence of the game strategy consisting of: weaknesses, understanding the strategy of the game and get to know the situation of the game in playing football.
- The results of descriptive analysis of motivation competence indicator include: confidence of 50.55%, mental matching 53.88%, self esteem and confidence of 53.33%, and a sense of togetherness of 62.50% contains the understanding that the majority of trainers have the same expectations about motivation competence consisting of confidence, mental compete, self-esteem and confidence and a sense of togetherness during training.
- The results of descriptive analysis of technical competence indicator include: demonstrating technique of 57.77%, correcting the technique error of 55.55%, understanding the ability of the students of 47.22% contains the understanding that the majority of trainers have the same expectations about technical competence consisting of skills modeling techniques,and understanding of students' skills in the learning process of football games.

Description of coach's competence based on Structural Equation Modeling (SEM) analysis with Approach of PLS (Partial Least Square) covers three stages:

1) Measurement Model (Outer Model)

The two criteria used in the outer model are convergent validity and composite reliability. Convergent validity aims to test the validity of variables done by using confirmatory factor analysis on each variable and composite reliability aims to test the reliability of variables or constructs. The results show the character development competence variables (X_1) represented by 4 indicators ($X_{1.1}$, $X_{1.2}$, $X_{1.3}$ and $X_{1.4}$), motivation competence variable (X_2) represented by 4 indicators ($X_{2.1}$., X2.2 , X2.3 and X2.4), the technical competence variables (X3) represented by 3 indicators (X3.1, X3.2, and X3.3) and the game strategy competence variable (X4) are represented by 3 indicators X4.1, X4.2, and X4.3) are valid (loading factor value > 0.5) and significant with t arithmetic> t table (1.96). The results are in the following table 1.

TABLE 1. THE ANALYSIS RESULT OF CONVERGENT

Relation.	Original Sample (O)	Standard Deviation (STDEV)	TStatistics (|O/STERR|)
$X_{1.1}$ <- X_1	0.846745	0.04286	19.756018
$X_{1.2}$ <- X_1	0.57137	0.12237	4.669205
$X_{1.3}$<- X_1	0.592829	0.134324	4.413422
$X_{1.4}$ <- X_1	0.702655	0.084774	8.288606
$X_{2.1}$ <- X_2	0.806156	0.042816	18.828359
$X_{2.2}$ <- X_2	0.857744	0.04278	20.050213
$X_{2.3}$<- X_2	0.671737	0.130956	5.129496
$X_{3.1}$ <- X_3	0.719148	0.087859	8.185283
$X_{3.2}$ <- X_3	0.714683	0.080761	8.849406
$X_{3.3}$<- X_3	0.770392	0.068335	11.273761
$X_{3.4}$<- X_3	0.673219	0.105215	6.398493
$X_{4.1}$ <- X_4	0.813783	0.043695	18.623971
$X_{4.2}$ <- X_4	0.715287	0.0921	7.766401
$X_{4.3}$<- X_4	0.831997	0.051516	16.150331

The results of the composite reliability evaluation show that all the indicators that measure the constructs competence of coach (X) covering the variables of character development competence (X1), motivation competence (X2), technical competence (X3) and game strategy competence (X4) are said to have good reliability, with value> 0,7. The results are in the following table 2.

TABLE 2. RESULT ANALYSIS OF COMPOSITE RELIABILITY

Variable	**Laten Variable**	**Composite Reliability**
Competence Coach	a. Character Development(X_1)	0.777162
	b. Game Strategy(X_4)	0.824253
	c. Motivation (X_2)	0.811335
	d. Technique (X_3)	0.830976

- *Structural Model (Inner Model).*

Evaluation of the structural model (inner model) is done to know the relationship between variables, namely the relationship between the competence of the coach (X) with the character development competence (X1), motivation competence (X2), technical competence (X3), and game strategy competence (X4). Estimation of structural model of competency relation of coach with competence component of coach variable shows t-count value > t-table (1,96) All parameters show significant structural model relationship. The results are in the following table 3

TABLE 3. ESTIMATION OF COACH COMPETENCE RELATION MODEL

Relation.	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STERR|)
X-> X_1	0.868850	0.033335	26.064044
X-> X_2	0.870154	0.032347	26.900712
X-> X_3	0.827288	0.049752	16.628261
X-> X_4	0.883477	0.025850	34.177510

The pattern of relation variables can be seen in the figure below.

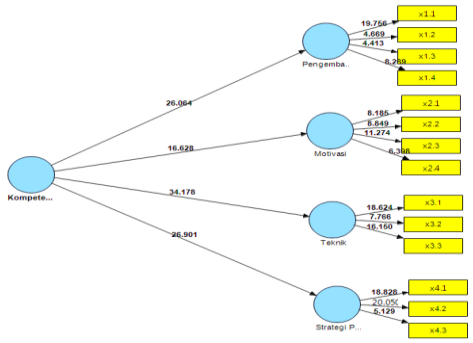

Fig. 1. Variable Relationship of Model Coach Competencies

2) Weight Relation

The value of evaluation test on structural equation model in SEM through PLS (Partial Least Square) can be known from the value of goodness of fitness or R-square value (R2). The result of analysis obtains R-square (R2) value for model of Character Development Competence (X1), Motivation Competence (X2), TechnicalCompetence (X3) and Game Strategy Competence (X4) in the following table 4.

TABLE 4.EVALUATION TEST OF STRUCTURAL MODEL OF. RSQUARE (R^2)

Variabel	Variabel Laten	R Square
Coach Competence (X)	Character Developmen (X_1)	0.754901
	Game Strategy (X_2)	0.757169
	Motivation (X_3)	0.684405
	Technique (X_4)	0.780531

Based on the results of the discussion, it can be seen that all the indicators are valid and significant in representing the competence variables of coaches and there is a significant positive influence between the competence of coaches with the competence of character development, motivation competence, technical competence and competence of game strategy.

3) Product Evaluation

The percentage of the coach's description of coach's competence score including 59.69% of character development competence, motivation competence 55.00%, technical competence 53.51% and game strategy competence of 50.00% contains the understanding that the majority of coaches have the same expectations about the competence of coaches covering 4 components that shape it. The value of the evaluation test of the model of structural equation on SEM through PLS (Partial Least Square) is known as follows:

- Measurement Evaluation on Outer Model shows competence of coach (X) consisting of character development competence variable (X_1), motivation (X_2), technique (X_3) and game strategy (X_4) represented in some indicators, stated valid with value of loading Factor averaged > 0.5 and reliable with value > 0.7 and expressed significant with the significance level of t count> t table (1.96).
- Evaluation of Structural Model Analysis (Inner Model) shows the relationship between competence of coach (X) with character development competence (X_1), motivation (X_2), technique (X_3), and game strategy (X_4) describing all the parameters of the structural model relationship which is significant and has a positive influence on the competence of coaches where the average t-count is greater than t-table (1.96). The data analysis using Smart PLS 2.0 gives R-square value (R^2) indicating that all indicators in representing competence variable of coach describes significant influence.

Based on the results of quantitative data analysis, the majority of coaches' existence variables have expectations of support from government and related institutions, especially for the sustainability of training competence development and formal legality of the coaches competence. Relevance of government support and related institutions, in this case the association of PSSI, KONI and SSB association can be used as the legal basis of public trust on the coaches.The competence of football coaches for early-aged students has a relationship with and influence on the competence of character development, motivation competence, technical competence and competence of game strategy. The existence of the relationship and influence conceptually gives impact on the competency standard of football coach for early-aged students that are represented by 4 variables and developed into several competence indicators, which can be formulated that competency standard that must be possessed by a coach consists of attitude, knowledge and skill elements.

VI. DISCUSSION

A. Description of Context Evaluation of Coaches Competency

Data and information obtained from some SSB coaches show that the pattern of competence development offootball coaches for early-aged students depicts that its existence requires the legality of support from government and related institutions such as the Association of PSSI, KONI and SSB Association. The existence of coach competencies in development is highly dependent on the performance of coaches in SSB. The mastery and understanding of exercise material is not enough to be a main stay if not accompanied by some other expertise.

These other skills relate to an understanding of the training method, of the capacity of the trainees he coaches, so that the contents or training materials to be trained are the combined fields of science as the source of the training material intactly required to achieve the targets that the coach has programmed. Studies show that one of the most influential people in sports experience for athletes is the trainer and contextual environment created by coaches [4].

B. *Description of Input Evaluation of Coach's Competencies*.
The coach's human resources should have basic competencies related to coach education. To support the success of coaches in the field, acoach should have a formal education related to the field to be occupied. The average coaches handling SSB have formal education backgrounds ranging from high school to college and the average duration of training is between 5 - 10 years and they have a license qualification as football coach required by the Association of PSSI.It is proven that almost all SSBs have licensed trainers of D and C qualifications. The facts are not enough, of course, since the coach should also improve his ability by following upgrades, training and courses related to the performance requirements of the coach. In general, to improve the knowledge and quality of human resources coaches should master the coaching sciences which are usually provided by SSB associations in their respective areas by organizing relevant, licensed and certified coaching courses.

C. *Description of the Evaluation of Coach Competency Process*
Based on the results of quantitative and qualitative data exposure, the competency standard generated in this research is the performance change of the coaches related to the four components of competence including:

- Character Development Competence
  Developing character can be done in various ways, the result of research by Doty showed that character can be taught and studied in sports atmosphere. Exercising can build character, if the environment is structured and there are goals and plans to develop character [5]. Developing character values requires more in-depth study because of several pillars of each character still being developed again based on the character traits. A person of character embodies both character and moral character [6]. Based on the nature, character is divided into two characters namely performanceand moral characters. Rudd and Mondello definitions of character produced two major themes: one related to moral character and the second to social character [7]. The result of the study and analysis in this research is that the value of character on a certain level is done by the coach in order to motivate the students, such as the habit of coaches coming on time to the place of practice, always praying before and after practice, never leaving the practice site before the time. The behavior of the coach reflects discipline and sportsmanship, fair play, and mutual respect.
- Competence Game Strategy
  The precision in running a strategy depends on the formation of players who are adapted to the ability and mastery of the basic skills of playing football owned by the players. Strategy is the overall approach that is related with pre-defined planning, while tactics are those that are designed and executed in a game. Strategy refers to the movements needed in a match and its function as a supporter of tactics in the game. Thus, strategy and tactics have different meanings, but in the implementation both terms are interrelated with each other to achieve the same goal of winning the game. Based on field notes and observations,it is found that the coach's depiction at the moment of applying the game strategy of football is strongly influenced by the basics of playing football. The basics of playing football include the skills of playing football, physical condition and knowledge (intelligence and memory) For that a coach is demanded to understandthe game strategy very well, especially to understand the strengths and weaknesses of the opponent, to evaluate each of the results of match strategy applied and to apply variations of strategy to deal with different opponents condition.
- Competence Motivation
  The motivation of SSB coaches in the process of coaching the players in SSB is none other than channeling his average hobbies as a former football player, a boost of pleasure, and his own satisfaction so as not to think of the size of the form of rewards received. The role of the coach as a learning agent is a trainer as a facilitator, motivator and inspirator for his students. As a motivator, the coach should be able to generate training motivation for his students by paying attention to the principles of having interest and attention to his work, providing tasks that are easy to understand and rewarding the performance and achievement of his students. From that exposure, the motivation that must be possessed by the coach of early-aged studentsin conducting the learning process in SSB illustrates the things related to the personality of the coachin instilling and helping to build self-confidence, self-esteem and belief, mental match and sense of togetherness that arise in the coach (internal motivation) without the stimulation or help of others.
- Technical Competence
  The ability of coach in game techniques is a very important role and responsibility, because students who are trained are students aged in 8 - 12 years which is the golden age. The process of learning in early childhood is a very strategic period of guidance, because early age is the first period in a series of systematic, focused, gradual,, and continuous development of students. In addition, the learning process at an early age is the age where students are first introduced to basic footballing skills that include: feeling with the ball (ball feeling), dribbling, passing,

stopping the ball (controlling), kicking the ball towards the goal (shooting), heading the ball, attacking, defending, and keeping the goalwell and correctly. Based on this, the coach must have technical competence in the form of basic engineering knowledge of football game which includes understanding and mastery of basic technique of playing football well and correctly so as to enable students to be able to perform and practice some basic football playing techniques taught. Therefore, understanding the basic techniques of playing football needs to be taught to the students as the foundation of the basics of playing football well and correctly.

D. *Description of Product Evaluation of Coach Competency*

A competent trainer is a trainer who can deliver his knowledge to trainees, and demonstrate techniques to them, so that the students can perform the techniques properly and correctly. A competent football coach is a coach who has the ability to compete in accordance with the science of coaching he or she has learned. The competence of football coach for early-aged trainees consist of character development competence, motivation competence, technical competence, and competence of game strategy which are then developed into several competency indicators that must be owned and required. Thus, it can be stated that competence is a statement of what a person should do in the workplace to demonstrate his knowledge, skills and attitudes in accordance with the standards required

The results of the evaluation study, that is the illustration of the competence of football coaches for early-aged students is divided into three elements: 1) Attitudes (affective) that cover character development competence, such as discipline, sportsmanship, fair play, mutual respect, and 2) motivation competence , namely confident, mentally compete, 3) skills (psychomotor) which includes the competence of the game strategy (knowing the weakness and strength of the opponent, the strategy of the game, match situation). These three elements are the most basic competencies that must be possessed by football coaches for early-aged students to serve as the foundation of competence standard that include attitudes, knowledge and skills. The results are clarified by Broke & Stone's opinion in Osman who stated "The essence of understanding of competence so far is to include the mastery of 3 types of abilities, namely: attitude, knowledge and technical skills".

VII CONCLUSION AND SUGGESTION

A. Conclusion

The results of quantitative and qualitative data analysis using CIPP evaluation model consist of:

- The context evaluation of the analysis results states that the existence of the coach who has the legality can be used as the legal basis of public trust on the competence of the trainer.
- The input evaluation of the analysis results state that the background of HR trainers of football coach for early-aged trainees to support their competence should have at least a high educational academic qualification of SMA / SMK / MA, the duration of training experience is 5 to 10 years and should have license D according to authority given PSSI Association. 3. Evaluation process analysis results state that: 1) the character development competence is a very basic foundation in shaping the values of coach personality that must be applied in the learning process of playing football. 2) motivational competence is a motivation that must be owned and developed in the trainees' learning process of playing football . 3) technical competence is the mastery of football playing skills that must be owned by every coach and developed in the learning process of playing football, and 4) the competence of game strategy in learning process of playing football should be able to be appliedand practiced on the field in an actual gameatmosphere.
- Evaluation of product analysis results state that the competence of football coaches for early-aged students has a relationship with and influence on the competence of character development, motivation competence, technical competence and competence of game strategy. The existence of such relationships and influences is a description of the competency standards that a football coach for early-aged students should have. Conceptually, the competency standard of football coaches for early-aged students are represented by 4 variables and developed into a standard competency formulation which is the foundation for football coach for early-aged students in football school (SSB). The standard competence of the coach is conceptually composed of: attitude (affective), knowledge (cognitive), and skill (psychomotor).

B. Suggestion

Based on the above conclusions, some suggestions that can be presented are as follow:

- The formulation of the competency standards of football coaches, especially those for early-aged students has not yet been formulated or established by the Association of PSSI.Therefore, it needs an instrument to formulate competency standards for football coach for early-aged students which can be applied nationally.
- This research is only done on the football coach of early-aged students (U-9 sd U-12), so it is necessary to hold research development at the young age level (U-13 sd U-20) and for the development of coach competence in other sports that have different characteristics from those of football sport.

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The Development of Students' Intrapersonal Instrument of Electrical Engineering Program Vocational Schools in Bali

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Abstract*—This research aimed to develop an instrument to measure the intrapersonal skill of Electrical Engineering Program students at Vocational High School in Bali by using Likert scale. This capability is important in regulating and monitoring personal's goals during vocational education at SMK. This instrument has been tested to 110 students at Engineering Utilization of Electricity Program in the entire province of Bali. The validation of the instrument through the content validation by the experts, the validation grains measure with Momment Product engineering, and the validation of the construct done by factor analysis. Factor analysis uses the confirmation method Maximum Likelihood (ML) with the conformity or suitability obtained Chi Square amounted to 113,8 (p-value = 0,2622) and Goodness of Fit Index (GFI) by 0.92.

***Keywords*—intrapersonal intelligence, vocational students, factor analysis**

I. INTRODUCTION

Nowadays the growth of education is shifted to students' progress in several domains that include the cognitive domain, the psychomotor domain, and the affective domain [1, 3, 5, 11, 13, and 18]. These three domains are measured through different instruments. In general, cognitive abilities are measured through test instruments [4], psychomotor abilities are measured through observation sheets, and affective abilities are measured through questionnaires. In the assessment of students' abilities, the instruments heed to be reliable. According to Naga [14], measurements in education include several things. First to measure the hidden features that was invisible of the participants / students. Second, to measure the latent characteristics of the students was by giving a stimulus in the form of a questionnaire or a precise measuring instrument. Third, the responses can reflect the underlying features of the students. Fourth, the responses gained can be adequately scored and interpreted. To meet the above four things, the instrument must have the process of validation before it is used. According to Djaali [6], there are several kinds of validity, namely content validity, construct validity, and empirical validity or validity criteria. The content validity is used to measure the degree of mastering content of a particular material that should be mastered in accordance with the learning objectives. In accordance with Gregory [10], to know the instrument is valid or not, it must be done through the examination of the test / instrument grid to ensure that the items represent or reflect the overall content or material that should be proportionally controlled. Therefore, Wiersma and Jurs [20] state that content validity is basically based on logical analysis, so it is not a statistically calculated coefficient of validity. Furthermore, Mardapi [16] writes that the evidence of validity is determined according to a rational analysis of the content of the test / instrument whose judgment is based on individual subjective judgment. According to Azwar [2], the logic decision on the alignment of grains with the purpose of measuring (indicator) cannot be based on the author his/her self only but also it requires an assessment agreement from some competent assessors in that field. The validity of the instrument applies not only to cognitive and psychometrics instruments but also to affective instruments.

Intrapersonal Ability is the ability of oneself. This ability is the ability to understand oneself and be responsible for one's own life. Intrapersonal ability is one form of personal ability; the other is the interpersonal skills according to Gardner [9]. Lwin reveals that children with high intrapersonal skills tend to think of self-assessment. Such of these children like to do self-introspection, correct the shortcomings and weaknesses, then try to improve themselves [17]. According to Hoerr [12], students' activities that reflect intrapersonal skills are controlling feelings and moods [7], pursuing personal interests and organizing self-agenda, learning through observation and listening, and using meta-cognitive skills.

Thus, this research was focused on the preparation and development of students' intrapersonal instrument of SMK Electrical Engineering Program in Bali with research problems such as, first, how are the compilation stages of students' intrapersonal instrument. Second, how the students' intrapersonal instrument met the principles of construct validity in theory and empirical. Third, how the reliability of the instrument.

II.RESEARCH METHODS

The research was conducted at all SMK Electrical Engineering Program in Bali. The population was the students of SMK Electrical Engineering Program. The sample of the study was done by random sampling technique on Electrical

Engineering Program. The data were collected with questionnaires.

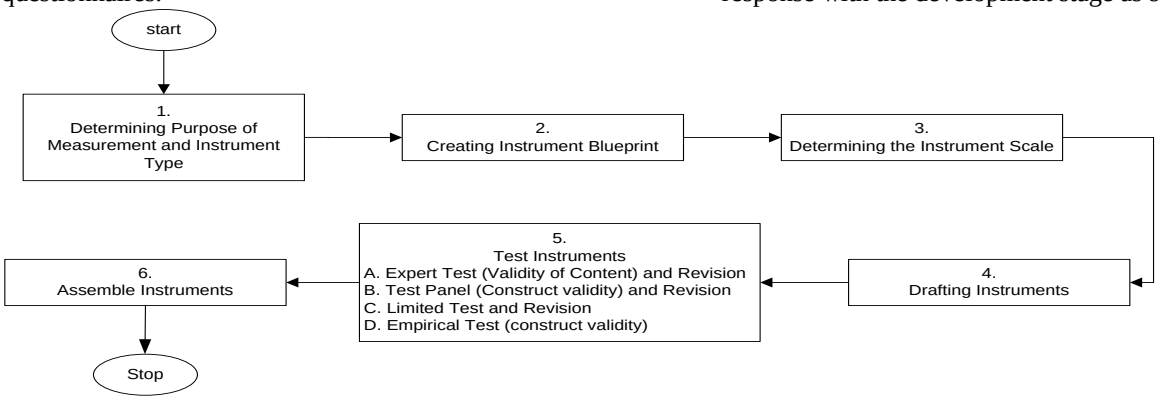

Figure 1. Stages of Instrument Development

The instrument was a questionnaire by using Likert-scale model. According to Mardapi [16], the Likert scale is commonly used in the measurement of the affective domain. According to Suryabrata [19], this method is actually called summated ratings but since it was first proposed by Rensis Likert in 1932 then this scale is famous by the scale of Likert model. The draft of the instrument was arranged in accordance with the instrument's blueprint and the structure of the relationship between the specified instrument and indicator items.

On the instrument testing stage, there were four times tests. Expert test was conducted by asking the opinion of 3 experts who are competent in the field of Counseling Guidance, Research and Evaluation of Education, and a senior vocational teacher. Content validity was measured by Gregory [10] formula:

$$VI = \frac{H}{A+B+C+D+E+F+G+H} 100\% \quad \text{..... (1)}$$

Note:

A: Cell that shows the disagreement of the three experts
B: Cells that show expert 1, 3 disagree and expert 2 agree / relevant
C: Cells showing expert 2, 3 disagree and expert 1 agree / relevant
D: Cells that show expert 3 disagree and expert 1, 2 agree / relevant
E: Cells that show expert 1, 2 disagree and expert 3 agree / relevant
F: Cells shows expert 1 disagree and expert 2, 3 agree / relevant
G: Cells that shows expert 2 disagree and expert 1, 3 agree / relevant
H: That cell indicating a valid agreement by all three experts.

Furthermore, a panelist test was conducted to measure the validity construct by asking for opinions and suggestions from 20 doctoral students of Educational Research and Evaluation who are preparing a dissertation. The validity of the constructs is measured by applying the Lawshe method as follow.

The development of the instrument uses an approach to response with the development stage as shown in Figure 1.

$$CVR = \frac{2Ne}{N} - 1 \quad \text{…..... (2)}$$

Note: Ne = Number of panelists who state important or very important, N= Number of panelists

A limited test was conducted on 10 vocational students to examine the items of the instrument, whether the statement could be understood or not. Empirical test was conducted on the students of SMK electrical engineering program in Bali. The data of empirical test was processed by Product Moment correlation formula (α) to know the internal validity of grains with the following formula.

$$r_{x,y} = \frac{N\sum_{j=1}^{N} X_{ij} Y_j - \left(\sum_{j=1}^{N} X_{ij}\right)\left(\sum_{j=1}^{N} Y_j\right)}{\sqrt{\left(N\sum_{j=1}^{N} X_{ij}^{\,2} - \left(\sum_{j=1}^{N} X_{ij}\right)^2\right)\left(N\sum_{j=1}^{N} Y_j^{\,2} - \left(\sum_{j=1}^{N} Y_j\right)^2\right)}} \quad \text{..... (3)}$$

Note: N = Number of respondents, Xij = Scores of items of i tested for respondents j,
Yj = Total score of respondents j

The items that have under r_tabel are declared unfeasible to be put on the instrument. Furthermore the reliability of the instrument was calculated by the following Cronbach Alpha (α) formula.

$$\alpha = \left(\frac{N}{N-1}\right)\left(\frac{S^2 - \sum Si^2}{S^2}\right);$$

$$Si^2 = \frac{k\sum X_{ij}^{\,2} - \left(\sum X_{ij}\right)^2}{k(k-1)}$$

…….(4)

Note: N= Number of items, $S_i^{\,2}$ = Variant item of i, S^2= Total score variant, k= Number of respondents, $X_{i\,j}$= Score item of i for respondent to j

The Construct Reliability (CR) can be calculated based on the standardized loading factor (SLF) and Standardized Error Variance (SEV) with the following formula.

$$CR = \frac{\left(\sum SLF\right)^2}{\left(\sum SLF\right)^2 + \sum SEV} \quad \text{..... (5)}$$

III.RESULTS AND DISCUSSIONS

There were 9 indicators that have been identified and there were 44 statements. Based on the result of the content validity test that was conducted by 3 experts, 3 items were declared unfit to be put on the instrument because the items were considered by experts to have double meaning so that they cannot be used to represent one indicator. Thus VI = 93%. Based on the theoretical construct test, that was conducted through the panel discussion, there are 3 items that must be out because the respondent will not understand with the statement, the three items had CVR coefficient smaller than 0.2. So until the panelist test, there were 6 items that are not suitable to measure the intrapersonal ability of the students.

Furthermore, empirical test was conducted to 110 students of SMK Electrical Engineering Program. The data was inputted through SPSS Statistics 22 software. There were 38 items analyzed its validity based on Product Moment correlation formula. With N = 110 and the significance level α = 0.05 with the 2-tailed test system, the result states that there are 6 items not feasible because p-value of significance are above 0.05 or the coefficient below 0.17 (r - table = 0.19).

Reaching on this stage, there were 32 items those were ready to be analyzed by confirmatory factor analysis. For this analysis, it used lisrel software 8.70. Through this analysis, it can be freely determined that the model of constructs that fit the theory. In this analysis there were some minimum requirements that must be fulfilled by the constructed model chosen to be stated that the item is valid construct, which the factor load has a t-count value more than 1.96 and the p-value of Chi Square is more than 0.05 to declare the chosen construct model in accordance with observational data (empirical data). The first stage, the 32 items were analyzed and the results were in accordance to Figure 2. The symbol of The INTRA_1 to INTRA_9 is an indicator 1 through indicator 9. The model consisted of 32 items, and then there were only 18 items that were constructed to obtain p-value Chi Square more than 0.05 which is 0.08067 according to figure 2 and the t-count factor was more than 1.96 in accordance with the figure 3. The items have been in accordance with the theory construct.

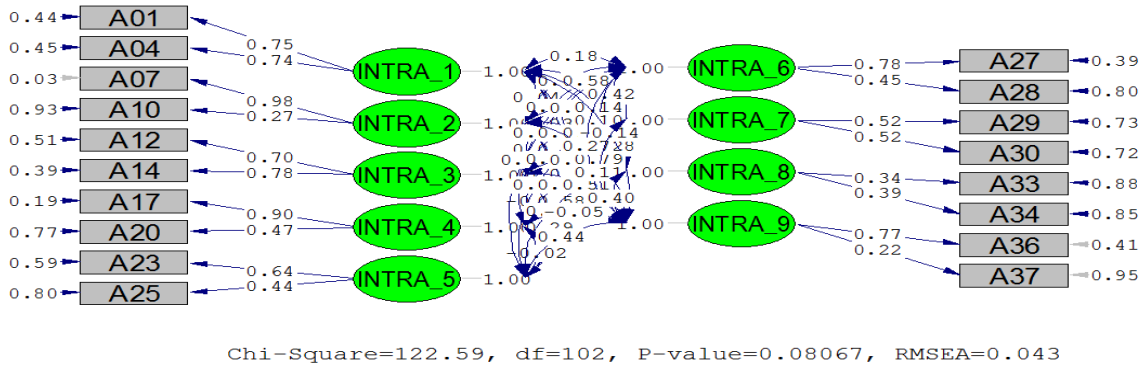

Figure 2. Constructed model of 18 Items and standardized factor loads

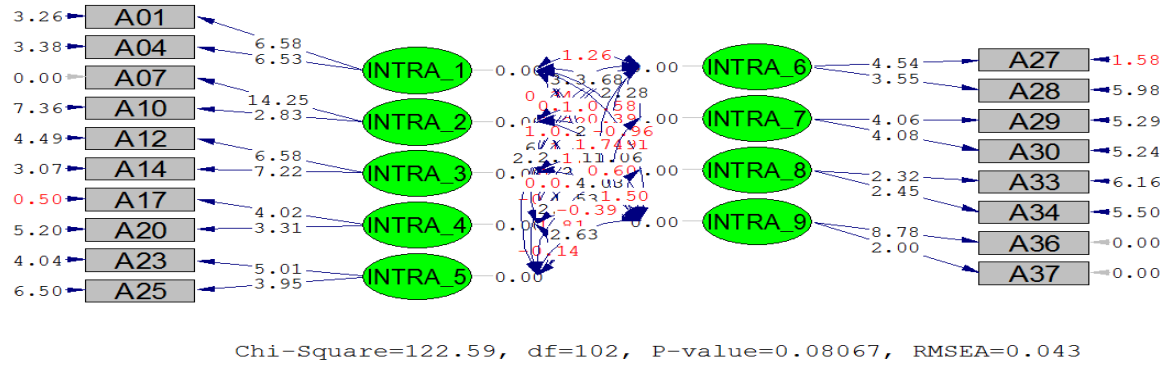

Figure 3. The construct model 18 items and t-count the factor load on an instrument consisting of 32 items

Furthermore, the researchers assembled the 18 items in to an instrument and tested to 134 students of SMK Electrical Engineering Program. Each indicator consisted of 2 items. The result of the process was obtained by the construct again as shown in Figure 4 and Figure 5.

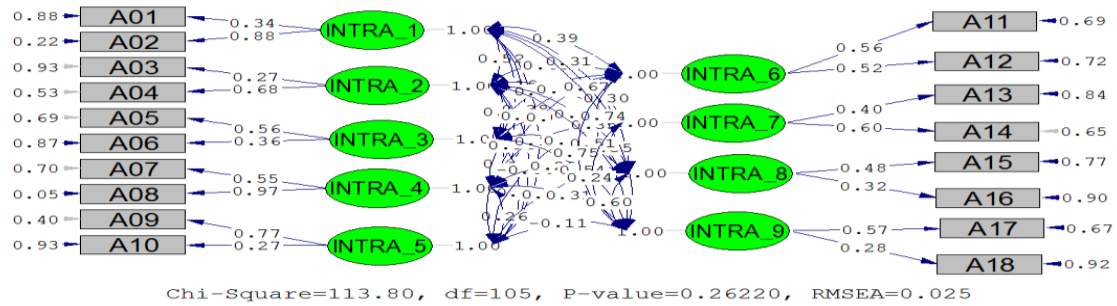

Figure 4. 18 items construction models and standardized factor loads on instruments that consists of 18 items.

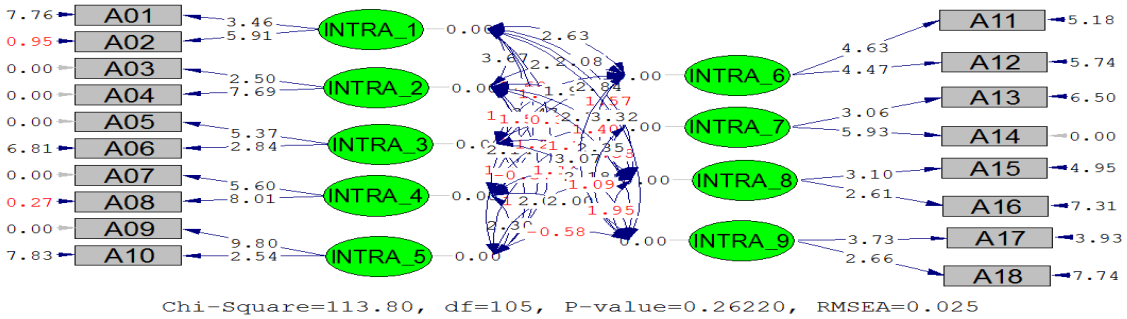

Figure 5. The 18 items construction model and the t-count factor load on an instrument consisting of 18items

By selecting the 18 items construct model in an instrument which consisted of 2 items of each according to figure 2, yields Chi Square = 113.8 with p-value Chi Square = 0.26220> 0.05, t-count The item factor loads were all more than 1.96 and the Goodness of Fit Index (GFI) = 0.92> 0.9. Thus the chosen construct was in accordance with the observed data (empirical), so that the items were declared as valid items for construct. According to Figures 4 and 5, the items were selected according to the table 1.

TABLE 1. THE ELIGIBLE ITEMS REPRESENTS INDICATORS

Symbols	Indicators	No. Item represents
INTRA_1	Emotional stability (self-conscious)	1, 3
INTRA_2	Be able to organize and motivate own self	5, 8
INTRA_3	Responsible for own self	10, 12
INTRA_4	Self development	13, 16
INTRA_5	Build self-esteem	19, 21
INTRA_6	Know the strengths and weaknesses of own self	23, 24
INTRA_7	Reflective thinking	25, 26
INTRA_8	Express self-fulfillment appropriately	28, 29
INTRA_9	Self confidence	31, 32

The key analysis in this study was Confirmatory Factor Analysis. This analysis used Maximum Likelihood estimation. Maximum Likelihood Estimation on Confirmatory Factor Analysis provides more alternatives for choosing the construct model. The construct model consisted of 18 points above was one of the alternatives. There are still other alternatives to choose that provide different levels of compatibility. The reliability coefficient in this study has a value lower than the attitude coefficient reliability that developed by Margono which is 0.710 [8] but, the difference in value was not conspicuous.

IV.CONCLUSION AND SUGGESTIONS

The instrument developed was in the form of questionnaires that used the Likert measurement scale. Based on the results of all 44 item pre test, as the original amount, this study standardized 18 items as an instrument of students' intrapersonal instrument. The instrument consisted of 9 indicators (each item represents 2 indicators). The instrument measured the affective domain. For a further suggestion to students, this kind of instrument can be meticulous and develop by using different measurement scales.

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Cooperative Learning Model Group Investigation Type and Mathematic Achievement of Elementary School Students

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***Abstract*--This is an experimental research which aimed at investigating the effect of Cooperative Learning Model Group Investigation Type based on Bruner's theory toward Mathematic achievement of grade IV elementary school students. The experimental design used was nonequivalent posttest only control group design. There are 33 grade IV students of SD Negeri 1 Pegayaman assigned as experimental group and 38 grade IV students of Madrasah Iftidaiyah Miftahul Ulum assigned as control group. Cooperative Learning Model Group Investigation type was implemented for 4 months (32 meetings) toward experimental group, meanwhile the control group taught by their teacher using their daily learning model (conventional model). The students' achievement were tested using math achievement test, then analyzed using t-test. The result showed that Cooperative Learning Model Group Investigation type based on Bruner's theory influence the students' math achievement.**

Keywords-- Cooperative Learning Model, Group Investigation, Math Achievement

I. INTRODUCTION

According to Piaget [1], elementary school students that are children of 7 - 12 years old, are at the stage of operational concrete cognitive development. At this stage, the child develops concepts with the help of concrete objects to investigate relationships and models of abstract ideas. At this age, learners have started to think logically. Their logical thinking ability occurs as the result of manipulating concrete objects. Therefore, learning, especially Mathematics learning, for elementary school age students should be implemented with more tools using concrete objects and provides the wider opportunity for students to know and deal with real life situations so that learning becomes interesting and motivate students to study [2].

However, field condition shows that Mathematics is an abstract subject, complicated, and requires precision in calculating especially in using formulas. It causes students to feel bored and less motivated to learn math [3]. This is also shown from the result of preliminary research conducted at SD Negeri 1 Rajabasa Raya in grade V students, that mathematics lessons decrease students' intention because of the minimum variety of learning methods used and lecture methods are frequently used, making teacher centered learning (teacher centered) and makes students passive.

These problems affected the students' learning achievement, especially in Mathematics. The average of Mathematics achievement obtained by students in the final examination is still low and still below the passing grade.

One of the effort that teachers can do to help students to learn are: giving motivation, looking at Mathematics lessons as a fun subject, and finally learning achievement increased significantly is trying to apply cooperative learning model which are relevant to it. One model of cooperative learning that relevant is Group Investigation (GI) model. It was said so because basically this is a learning model that invites students to participate directly in the learning process. Participating directly in this case is that students find their own materials or concepts learned through various sources, whether from teachers, books or internet. Students are involved from the planning, process, until the end of the lesson. The most important thing of this model is to train students to cultivate the ability to think independently [4].

Furthermore, it is stated that in Group Investigation model, students will be able to obtain various kinds of experience. The experience can be obtained by students in research activities, as well as in group activities [4]. The advantages of cooperative learning model Group Investigation type are: 1) improving learning achievement, 2) increasing motivation to learn, 3) creating atmosphere of mutual cooperation and interaction between students and between groups regardless of background. This will have a good impact on students' social attitudes, 4) to train students to have good communication skills, 5) Motivating students to participate and be active in the learning process from the first stage to the final stage of learning [4].

The advantages of group investigation seem to be very useful in improving the process and achievement of themes or subjects. However, in Mathematics learning, especially for elementary school students who are at the cognitive development stage of concrete operational, it needs the help of concrete objects that can be manipulated by students to establish their understanding of the basic concepts of

Mathematics. Cooperative learning model of group investigation type has not specifically recommended the use of concrete objects as learning aids, especially Mathematics learning, which can be manipulated by students to establish students' understanding of Mathematical concepts. Therefore, the implementation of cooperative learning model of group investigation type in this research was completed by applying Bruner's theory.

Bruner's theory is closely related to Mathematics learning and cooperative learning model of Group investigation type because Bruner's theory is basically provide a direct understanding for students about a material or concept learned by manipulating objects or props. Bruner in his method of discovery revealed that in Mathematics learning, students must find out for themselves the knowledge they need. "Finding" here is primarily "discovery", or it can also find something entirely new (invention) [5]. Finding themselves in Bruner's theory means that students are able to find the material or concept that is being learned by doing various activities, for example, by manipulating objects, observing directly the object being studied or the other. Another opinion was also expressed by [6] which stated that, Bruner's theory was a teaching that emphasized the importance of an understanding of the material structure of a learned science, the need for active learning as the basis of the true understanding and value of inductive thinking in learning. In this theory there were three stages, namely: enactive, iconic and symbolic. To be able to apply this theory well, a teacher must understand first about the material that they are going to teach.

Students' achievement is the ability that students gain after following the learning process [7]; [8]. Students' achievement shows the success of students in learning, also shows the success of teachers in teaching. [9]

Based on the problems related to Mathematics and students' achievement as mentioned earlier, this study was conducted with the aim of answering the main problem whether Cooperative Learning Model Group Investigation Group (GI) Based on Bruner's Theory has an effect on students' achievement of Mathematics of Grade IV elementary school students.

II. METHOD

This research was conducted at Elementary School of Gugus II of Sukasada District, Buleleng Regency, Bali Province in the second semester of academic year 2016/2017. The type of this research is a quasi-experimental with a non-equivalent post-test only control group design.

A total of 33 grade 4 students of SD Negeri 1 Pegayaman were involved as experimental group and 38 students of Madrasah Iftidaiyah Miftahul Ulum were involved as control group. Both groups were randomly selected from the 10 classes of grade IV in Gugus II, Sukasada District who has the average of learning achievement does not significantly different. The experimental and control group were between 9-11 years old. The experimental group consisted of 15 boys and 18 girls, while the control group consisted of 17 boys and 21 girls.

For 4 months (32 times) the experimental group taught by using Cooperative Learning Group Investigation model based on Bruner's theory, while the control group taught by the learning model that was implemented daily by the teacher (Conventional learning model). After the treatment, both groups were tested for their mastery of the subject matter by using achievement test constructed by the researcher, which has been tested the content validity, item validity, difficulty level, level of differentiation, and reliability. In order to test the hypothesis stating that cooperative learning model Group Investigation type based on Bruner's theory have an effect toward the result of Mathematics achievement of fourth grade student of elementary school, the data was analyzed using t-test.

III. FINDINGS AND DISCUSSION

The result of data analysis for hypothesis test by using t-test occupying SPSS program, found t value equal to 6.999 with significance level of 0.000. The significance level implied that the value of t analysis was significant, and it means the hypothesis stated that there was an effect of cooperative learning model type Group Investigation based on Bruner's theory that already tested empirically.

The results of this study were in accordance with the results of other studies found that the group investigation model could improve learning achievement of vocational school students [10]. It was also found that cooperative learning achieved much higher marks on post-test retention achievement and knowledge than lecture-based learning [11]. Compared to the traditional way, the implementation of cooperative learning methods in fact can improve the academic achievement of British students [12]. Later, it was found that students who were taught by cooperative learning significantly perform better than conventional students. Altun in his research stated that cooperative learning method has a good influence on learning [14]. Cooperative learning enables learners to receive positive feedback from the thinking process, thereby enhancing academic achievement better than traditional teaching and promoting interactive group learning experiences [13],[15],16]. Other research found cooperative learning positively affected students' achievement enrolled in Education subjects [16]. The cooperative learning group gained a higher achievement than the traditional class [17].

The findings of this study and the findings of previous research relevant to the findings of this study prove that cooperative learning models effectively improve the learning process and achievement. In addition to improving process and learning achievement, cooperative learning models have a nurturing effect on intrinsic and interpersonal skills. [18] This is possible because in the implementation of cooperative learning models students were required to work together in completing tasks. The tasks were designed in such a way by the teacher that students inevitably have to work together. Without cooperation, the tasks will be difficult to solve. In addition, in cooperative learning, students who are cleverer should help less clever students. If they are not assisted,

students who are less clever will hamper the completion of group tasks resulting in all members of the group get an unfavorable value.

Various research findings have proved the effectiveness of cooperative learning model in improving process and learning outcomes. However, this model has a variety of types such as Team Games Tournament (TGT), Student Team Achievement Division (STAD), Jigsaw, Group Investigation (GI), Think Pair and Share model, Decision Making Model, Debate Model, Mind Mapping Model, Examples Non Examples, Model, Make-A Match, Picture And Picture Model, Snowball Throwing Model, Stick Talking Model, and many other models. It should be examined deeper, which type or technique is suitable for specific purpose. In this study found that cooperative learning model of group investigation type effectively improve the learning achievement of mathematics. However, cooperative learning type of group investigation in this research was applied based on Bruner's theory that emphasized the learning of Mathematics by manipulating concrete objects. It remains to be seen whether cooperative learning model of group investigation type remains effective when implemented without the aid of the manipulation of concrete objects. Likewise, it is necessary to examine the effectiveness of this learning model for theme learning or other subjects other than Mathematics.

It is important to note also that this study was only done on the fourth grade of elementary school students. The effectiveness of cooperative learning model of group investigation still needs to be tested in other elementary school students of other grade or even at other school level, such as in junior high school or high school.

The assignment of subjects into the experimental and control groups in this study cannot be done randomly, consequently it is not impossible that the experimental and control groups have differences in some factors that may affect learning outcomes. This situation is often referred to as bias selection in experimental research. This may cause the internal validity of this experimental study in doubt. To overcome this matter, in this research was done equality test of Mathematics learning achievement of 10 classes of grade IV students in Gugus II Kecamatan Sukasada. The result of equality test found that the average of Mathematics learning achievement of those 10 classes was equal or not significantly different. However, in order to test more accurately the effectiveness of cooperative learning model of group investigation on Mathematics learning achievement, it is necessary to do research with subject who are assigned into experimental group and control group are chosen randomly. In other words the experimental design needs to be developed from quasi experimental design to true experiment.

Another thing that needs to be stated, teachers who teach in experimental groups and control groups in this study were different teachers. Differences in teacher characteristics can lead to differences in learning processes and achievement. In order to overcome this problem, before the teacher taught both in the experimental group and the control group, a discussion conducted between the researchers and the two teachers to synchronize the perception of general principles of learning. In addition, both teachers have the same academic qualifications of S1 Primary School Teacher Education, same work experience, and rank and class of the same. However, it may be important to conduct a study to test the effectiveness of cooperative learning model of group investigation type using the same teacher between the one in the experimental group and the one in the control group.

IV. CONCLUSION

Based on the results of research and discussion that has been presented, it can be concluded that Cooperative Learning Model Group Investigation based on Bruner's Theory is a model of learning that can be recommended to use in learning Mathematics in primary schools, especially for students grade IV.

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Pre-Service Young Learner English Teachers' Reflection through Simulated Teaching Practice

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***Abstract*— Simulated teaching practice was integrated into Material and Media Development course under Teaching English for Young Learner program in a university of education in Indonesia. This study described 26 pre-service young learner English teachers' reflection from simulated teaching practice videos, peers and lecturer's comment, peers' response cards, and self-reflections. The findings of the study are as follows. First, the participants had never before experienced simulated teaching practice for young learner. Second, they used reflection tools, such as videos, peers and teacher' comments, and observation of peers' presentations, to help them develop their awareness of the skills they employed, the competencies they need to improve, their strengths and weaknesses, as well as the difficulties they found and the decision to solve the problems. The reflection of these less-experienced pre-service teachers through simulated teaching practice promotes their professional growth.**

Keywords—reflection, pre-service, young learner English teacher, simulated teaching practice.

I. INTRODUCTION

Scholars in the area of teaching practice agree that the practice of regular reflection supports teachers' professional growth [1], [2], [3]. It is also agreed that as reflective practitioners, teachers are expected to think analytically and purposefully about their knowledge and skills as well as their students' growth and learning. The reflection makes the teachers learn and evaluate their teaching: they use their knowledge and skill to plan instructions and implement them in the classroom. They continuously do adjustment until learning occurs.

The practice of regular reflection is important for both in-service and pre-service teachers. As future teachers, pre-service teachers need to cultivate reflection skills. They need to develop their values, knowledge, and skills to become proficient [4]. The teacher candidates are required to develop an awareness of the skills they employed, the competencies they need to improve, their strengths and weaknesses, as well as the difficulties and the decision to solve the problems. The ability to find and cope with that problem during the teaching practice avoid pre-service teachers to experience discouragement and disappointment [5].

In order to prepare pre-service teachers to be proficient in teaching young learner, simulated teaching practice was integrated into Material and Media Development course in Teaching English for Young Learner program in a university of education. This case study focuses on pre-service teachers' reflection through simulated teaching practice. From the simulated teaching practice videos, peers' comment, lecturer's comment, and the observation of the classmates' teaching practices, the participants are expected to internalize and cultivate their reflection on what they had learned to prepare them for their professional growth.

II. LITERATURE REVIEW

English language proficiency knowledge, and knowledge and skills related to curriculum, syllabus, language testing and assessment, teaching methodology, teaching skills, and material development are acquired by teachers graduated from English Education Department [6]. Some colleges for teacher's training and education offer English for young learners in their curriculum, while some do not. Those teachers are trained to teach in secondary level. Their ability in teaching pre-primary and primary level is largely unknown [6]. For the purpose of this study, pre-primary and primary level roughly from the age of 4 up to 12 years old, for kindergarten and elementary students.

There are issues about "the younger the better" idea and the challenges on the initial implementation of language-in-education, especially in teaching English for young learners [7]. One of the issues is the primary English teacher. Regular teachers teach English in primary school in China [8], Korea, [7] as well as in Indonesia. It is because those countries lack of fully trained English for young learners teachers. The pre-service teachers are prepared to teach in secondary level, not in primary level, although English subject is also inserted in primary curriculum.

To prepare pre-service English teachers to be proficient to teach in pre-school and primary school, and to ensure adequate emphasis on young learner pedagogy [9], a university of education in Indonesia inserted a Teaching English for Young Learner program. One of the courses is Material and Media Development for Young learner course. The purpose of this course is to prepare the pre-service teachers to be able to develop fun, careful, and meaningful material; design interesting media; plan and implement teaching activities as well. The pre-service teachers should not use traditional approach, in which they read aloud a book,

repeated by the students or write on board and copied by the students [10].

In preparing a professional specialist English teacher to teach young learner, pre-service training in South Korea appears to be successful [7]. In Indonesia, young learner English teachers are trained in a concentration developed within the pre-service system [9]. However, the teaching practice is not in elementary or pre-elementary level. Therefore, the insertion of simulated teaching practice in a course under Teaching English for Young Learner Program is needed.

Teachers' professional knowledge can be developed through micro-teaching, observation, simulation, and role play [4]. Pre-service teachers prepare their future carrier as professional teachers by integrating field experience, practicum, and lecture course [11]. In order to be professional English teachers, pre-service teachers can conduct reflection, a special mental activity that plays important role in dealing with issue, challenge, conflict, and problem by looking at the action that have been done, the reason taking that action, and the result of the action [12], [13]. It is very important for pre-service teacher to do self-observation and self-evaluation for their professional growth because pre-service teachers should not only prepare subject and pedagogical content knowledge, but also respond to unknown reality [13]. The unknown reality may vary based on the place, time, level of students, context, and individual.

III. METHOD

This case study focused on pre-service young learner English teachers' reflection through simulated teaching practice. Case study in this study was intensive and holistic investigation as well as analysis on a group of people in an institution and the researcher had little control over phenomenon and the context [14]). The case was a group of pre-service students in Material and Media Development course in a university of education, and the analysis unit was their reflection.

A. Setting and Participants

The study was conducted for one semester from August to December 2016. The participants included 26 pre-service teachers in Material and Media Development course, in Teaching English for Young Learner Program in a University of Education. The class met 100 minutes every week. On the first meeting, each participant was given a topic. The topics were based on Kindergarten and elementary student syllabus. After they had the topic, they developed material, media, and two lesson plans in two weeks. One lesson plan was for teaching kindergarten level, and the other was for elementary level. For the rest of the meetings, on each week, there were two participants did simulated teaching practice in the classroom. The other participants made two big groups, one group pretended as kindergarten students, and another group pretended as elementary students. In 100 minutes of each meeting, one participant was given 15 minutes for teaching kindergarten level, 20 minutes for teaching elementary level, and 15 minutes for discussion session. The rest of the class wrote the comment in peer response cards and gave verbal comment in the discussion session. Both peers and lecturer gave verbal comment to the participant. After having teaching practice and discussion in the classroom, the participants were assigned to teach students in real-life context: real kindergarten and real elementary students in real schools, but before that, they revised the media, material, and teaching activity based on the comments and response card.

The purpose of teaching practice and discussion in the classroom was to give chance to the presenter to be well prepared before teaching real kindergarten and elementary students. Moreover, the participants would be able to observe the teaching plan of each other and could relate their material and the previous ones because each week the students would see different teachers [15].

B. Data Collection

The data in this study comprised of (1) videos of teaching practice in classroom, in kindergarten, and in elementary schools including peers' and teacher's comments; (2) peers' response cards; and (3) participants' self-reflection. Participants' performances in teaching practice were videotaped. The participants could watch the videos anytime anywhere and could watch them several time [16] to produce detail self-reflection. Another type of data involves documents. The documents were peers' response card and participants' self-reflection writing. To make the self-reflection, participants need to watch the videos of teaching practicum including the discussion with peer and lecturer, and read their peers' response card. The self-reflection includes the topic, the material, the media, the experience, the problem they encountered and the solution to solve the problem based on peers' and lecturer's advice and their own ideas.

C. Data Analysis

The researcher constructed a set of code for thematic analysis. To capture the meaning of the data, the data were coded in the following three stages [17]. First, the researcher watched the videos, read through all the documents, and assigned major categories, such as material, media, classroom management, etc. Second, the researcher marked the data by a code, for example, time management, song, active students, etc. Finally, the data were sorted on the basis of fit into topic that reflected the reflection of pre-service young learner English teachers.

The validity in qualitative research focus on the findings' interpretation [4]. More than one source of data, namely videos, peer response card, and participants' self-reflection enhance the validity of the result of this study. Triangulation was performed to promote depth analysis.

IV. RESULT

After designing material, media, lesson plan, and experiencing simulated teaching practice in the classroom, kindergarten school, and elementary school, and after having peer response card and peers' and lecturer's comments, the participants conducted self-reflection. It was the first time for the participants to teach young learners. They had never

experienced teaching English for young learners. The analysis and discussion in this session focus on pre-service teacher's reflection in teaching English for young learner.

A. Reflection on Material Design

Interesting classroom activities, task, and material motivate students [15]. One student was given topic "shape and color". The media that he made were color dice: a big dice with six different colors in each side, and a shape dice: a big dice with six different shapes in each side. When he did teaching practice in the classroom, everything ran well; but when he taught in kindergarten, he reported that for 15 minutes teaching to real kindergarten students, it was more manageable to teach either shape or color. Teaching both shape and color in one meeting in kindergarten level was not recommended. Different from kindergarten level, teaching both color and shape at the same time in elementary level was not a big problem.

Two participants reflected that the materials that they designed were too easy for elementary students, for example, for my school and feeling topic. The participants designed to give the vocabularies related to the topic and play game and sing song afterward. In the teaching practice, the students enthusiastically learned and followed teacher's instruction. They could finish the activities less than the time allocated. It made the participants thought hard about the next activities that should be conducted. To spend the time, for the next activities, participants instructed each student to make a simple sentence related to the topic. Other participant assigned students into several groups and each group performed the song learned on that day or previous meeting in front of the class.

Other reflection about material designed was participant's sensitivity in choosing the material related to students' level. One participant who got means of communication topic designed conversation on the phone activity. The peers' response showed that it was difficult for kindergarten students to perform such conversation. Therefore, the participant revised the material by introducing only the vocabularies related to the topic, such as telephone, newspaper, etc., and preparing the pictures of those means of communication.

The last one is the number of vocabulary introduced in one meeting. The participant who taught job found that giving new vocabularies and requiring the students to memorize them was not easy. His kindergarten students felt bored and confused in learning 10 job vocabularies in one meeting. Then, he decided to skip 5 vocabularies and focus only on 5 job vocabularies. He concluded that the number of new word introduced by teacher should be based on students' ability.

B. Reflection on Media

After being given the topic, each participants designed material and created their own media. The media developed by the participants were flashcard, dices for shape and color topics, newspaper basket to put vegetable flashcard, pop-up book for teaching food, beverage, and school. They also made direction map, tourism object map, direction symbols, hats made of paper with the shape of pirate hat, masks with the shape of Dora and friends from Dora the explorer characters, a popular children's movie. In addition, the participants also created a family tree on a flannel cloth, flannel board for teaching transportation, poster of human body, kims' board game for teaching days and months, stick puppet for teaching job, finger puppet for teaching greeting and introduction, pop-up board for teaching sport, alphabet board for playing play dough, snake and ladder modification, mix and match clothes, puzzle, and season wheel spin.

There were some problems encountered in term of media. The first problem was the size of the media. Some participants designed media which made their classmates difficult to see. Based on the peers' comment in peer response card, along with the peers' and lecturer's comment in discussion session, the media should be revised. The participants revised them by making more visible media, so that all students, including those who sat at the back, could see the media. The second problem was the font of the words or sentences. It was revised by choosing the font that was easily readable. The third was the words and the pictures in the flashcard. It was agreed that the picture should be put on one side of the flashcard, and the word should be written on the other side. The reason was that when the teacher played guessing game by showing the picture of the flashcard, the students would not know the English word because the word was on the other side of the flashcard. The written word was important to be put in the flashcard to introduce the written form of the vocabulary being learned. Four, the map or board that was stuck on the wall fell down several times and it distracted both the teacher and the students. To avoid that, the participant should prepare stronger adhesive tape or double tape.

Two participants who taught clothes and communication prepared puzzle as media. They asked students to arrange puzzle and mention the picture. This activities interested elementary students. They liked puzzle very much. However, for kindergarten level, only one group of students could arrange the nine pieces puzzle into correct order. Other groups needed the help of the teacher. It was concluded that puzzle could only be used as media for kindergarten student with the help of the teacher.

C. Reflection on Time management

Participants were given 15 minutes for teaching kindergarten, and 20 minutes for teaching elementary students. Mostly, when they taught kindergarten students, they needed more than 15 minutes. It was because they were so busy handling active students who were interested in the media and activities. To be able to manage the time wisely, the participants committed to improve their classroom management skills in terms of handling students.

On the other side, several participants finished the lesson less than the time allocated. The participants needed to fill in the time and made plan B for every session. One of the plan B conducted by the participants was playing game '*domikado'* by making big circle, singing and playing game, then one student mention the vocabulary learned on that meeting. Other activities were singing a song, and assisting students (in

elementary level) to make simple sentence based on the vocabulary or topic in that meeting.

D. Reflection on Song

One of the most feasible and interesting strategy for teaching English for young learners is introducing English song. In the teaching practice, most participants used song as one of the strategies in teaching. They searched the existed song in *youtube* based on the topic given, some participants modified the song to be simpler, and some create a new song for the students. In the teaching practice, participants encountered problems in using song. First one, they forgot their song. When the participants sang the song in front of the class and forgot the next lyric, the students became confused. To avoid this problem in the future, the participants had to prepare themselves well before teaching the song. Second one, some songs were difficult and too long for young learners. For this problem, the participants concluded that they needed to carefully select and modify the song. The third one was although the song was a short song, sometimes the song was complicated to be pronounced by the students. Therefore, in choosing and making a new song, the participants should consider students' pronunciation ability.

E. Reflection on Students' Participation

Having active students is one thing that is always expected by teachers. However, for pre-service teachers, handling active kindergarten and elementary students were very big challenge. The participants had problem in managing the students who were really interested in touching, holding, and playing the media, such as pirate hat in giving direction topic, play dough in alphabet topic, pop-up book and board in sport and food and beverage topics, and many others. Beside the media, the students were very active in singing song. In several meetings, all students came in front of the class to sing the song together. In addition, the students stood up on the chair to see the teacher and media covered by other students and to be seen by the teacher and chosen to play a game.

The participants realized that those crowded situations should be handled appropriately. The liveliness of the students should be controlled. It was found that some teachers in South Korea, Japan, and Taiwan had similar problem in controlling students' active participation [7]. The challenge in classroom harmonization appear because of the interactive way they implemented in the classroom. The participants did several things, such as, paying attention to all students, assigning the students to be several groups, and giving chance to each group to sing song, deliver their ideas, and play games.

F. Reflection on Pronunciation

One of speaking aspects is pronunciation. The teacher is expected to give model in pronouncing the English words. Two participants got comments from their peers in terms of pronunciation. For example in pronouncing Tuesday and Thursday, the participant did not pronounce those words correctly. From peer's response card and the discussion session in the classroom, the participants prepared themselves to pronounce the words correctly for the next teaching practice in real students. It is important for the teachers to pronounce the words with correct pronunciation because young learners reproduce the pronunciation of the teachers with deadly accuracy [18].

G. Reflection on Psychological Feeling

All participants had not had experience in teaching English for young learner in the real context, to the real young students. It was the first time for them to teach kindergarten and elementary students. Before the day of teaching, they felt nervous, what it would be like teaching little children. To prepare them, they were instructed to come to the schools and observe the other participants who got schedule to do teaching practice at that school.

To have well-prepared psychological feeling, those less-experienced young learner pre-service teachers also need to know three important things in teaching English for young learner [18]. First, the participants should understand the way children think and learn. Second, the participants should have teaching skill and knowledge. Third, they should have ability to teach initial literacy in English. In addition, there are two key aspects of child language learning. Participants should consider children's reaction when they encounter a new language and children's literacy skills.

H. Reflection on Handling Students' Misbehavior

The problems encountered by the participants on the teaching practice day were students' misbehavior, for example, crying, disturbing other students, did not want to sit down, asking the parents to accompany them in the classroom, and always looked at the parents outside. To handle this situations, the participants gave reward to the students who listened to the teacher's instruction and did not misbehave in the classroom. The rewards were in the form of motivating words, like very good, excellent, etc., sticker, stars, chances to sing a song with teachers in front of the class, or chances to do a game. The participants needed to be very patient in dealing with young learner [15].

I. Reflection on Assigning Group

In assigning groups in elementary level, the participants did not find any problem because they could assign the group by various activities, such as finding-friend game, finding other students who had similar cards, for example cards with similar animal pictures, or similar words, or colors. Assigning group activity had already been designed in fun way. However, problem occurred in kindergarten students. Some students did not want to be in group with other students; they cried and stayed still with their close friend. The thing that was done by participants to proceed the activity and to calm the crying students was letting them with their own friend, in addition, the participants explained in the soft way that all students in that class were friends, they needed to know and love each other, and it would be really nice when they have many friends.

V. DISCUSSION AND IMPLICATION

This study discusses pre-service young learner English teacher's reflection from simulated teaching practice. The

simulated teaching practice led participants to develop their professional growth. In this first experience having simulated teaching practice, the participant noticed the characteristics of young learners [15].

First, young learners wanted a stress-free and comfortable environment. The participants' reflection showed that the way to speak to young learner was different from it was to adult. Young learners loved when participants spoke in soft and cheerful way. Young learners' motivation to learn new language was increased when the class full of smile and laugh. Besides, they also loved given touch, hug, and hi-five. Through three times teaching in simulated teaching practice, the participants trained themselves to create a stress-free and comfortable atmosphere in the classroom.

Second, young learners wanted to see colorful object around them. They liked colorful media designed by the participants. The media were designed carefully concerning color, size, shape, lay out, etc. The flashcards, dices, books, maps, symbols, hat, mask, family tree, board, stick puppet, finger puppet, puzzle, and wheel spin were designed colorfully to attract students' interest. However, newspaper baskets were also liked by the students although they were not colorful. Young learners liked the unique shape of the baskets.

Third, young learners needed to be motivated continuously during lessons. They had short span of time for concentration, only around 5 to 10 minutes. Therefore, participant should pay equal attention to all learner, give applause to the learners who performed in front of the class or answer teacher's question, and give reward in the form of stars, sticker, etc. Variety of fun, careful, and meaningful material and activities could keep the learners' interest [18].

Fourth, young learners could not sit still for a long time. They stood up, approached the teacher, stood in front of the class with the teacher when the teacher taught using media or sang song. The participants handled the crowded classroom by giving reward. Fifth, they liked songs and games. The games and songs given by participant could make the learning process fun and meaningful.

VI. CONCLUSION

This study has analyzed pre-service young learner English teachers' reflection through simulated teaching practice. The findings of the study are as follows. First, the participants had never before experienced simulated teaching practice for young learner. Second, they used reflection tools, such as videos, peers and teacher' comments, and observation of peers' presentations, to help them develop self-reflection about their awareness of the skills they employed, the competencies they need to improve, their strengths and weaknesses, as well as the difficulties they found and the decision to solve the problems.

Since there were only 26 participants involved in this study, the finding cannot be generalized. The conclusion of this small number of participants cannot represent pre-service young learner English teachers' population. However, the perception and reflection of their first time teaching practice to young learners through triangulated qualitative data collection can provide necessary guidance to help less-experienced pre-service young learner English teacher.

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The Development of Pragmatics Learning Tools to Improve Critical Thinking Skills

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***Abstract*— The research development in the first stage was aimed at arranging prototype of Pragmatics learning tools oriented problem-based learning model which could improve understading concept and students' ability to think logically and critically. The subject of this study were both Ganesha University of Education, Undiksha lecturers and the students of Indonesian Language and Literature Study Program in the 4th semester. The research method used was descriptive qualitative method that compraised the fourth semester students and lecturer in Indonesian Language and Literature Study Program at Ganesha University of Education as the subject of the study. The data were collected through questionnaire, interview and document study. The result of this research showed that learning tool which was required by lecturers and students in Pragmatics learning course including syllabus, lesson plan, textbooks, media and assessment oriented on contextual and actual political social problem became the polemics in social life.**

***Keywords*—learning tool; critical thinking**

I. INTRODUCTION

Language is defined as the means of communication used to exchange information and to share ideas, but it is sometimes that the information or ideas spoken by the speakers have the hidden meaning itself. The listener must be able to understand intention and meaning of the information spoken by the speakers. Understanding the meaning of the speech is not only enough to comprehend the meaning of each of element in the form of information spoken by speakers. Other elements also influence the meaning of information spoken which is related to the context of the language.

In understanding the speech, the listener may not only focus on the context in the form of language text, but there are other factors that should be concerned about. Those are both physical and social contex. It is also the prior knowledge which are owned by both speakers and listeners [1-3]. In case, the listeners do not understand what might be already spoken by the speakers, but also to understand the contexts of speech being spoken. Those aspects as explained above is worth considering its truth as the major factors which effect the use of language in daily life might often cause misunderstanding, so the meaning of the utterance spoken by the speaker is not well-understood.

In line with above situation, the pragmatic learning course is one of the functional language courses that has a strategic role in equipping students with an understanding of the concept of meaning of speech, improving students' critical thinking skills in understanding the meaning of speech, improving students' skills in communicating effectively, and solving problems - issues which is related to the scope of meaning of speech. Students as future teachers are expected to be sensitive about their context when they speak. The students ways of communicating will greatly determine the quality of the students' personality.

Students are considered as a human being who are already mature, they are not only required to understand the concept of the material and communicate it, but the students must also be able to communicate reasonably. Students are required to have the ability to think further, namely on the level of analysis, synthesis and evaluation. The ability to think is a high level of thinking skills called critical thinking. Ennis argued, critical thinking is reasoned and reflective thinking by emphasizing decision-making on what to believe or do [4].

The definition of critical thinking refers to one's ability to make and conduct evaluation on the evidence based conclusion [4] [5]. It is also very important in today's life since we have faced various political speech, news, conversations, newspapers, tabloids, advertisements, and the internet that are not absolutely true. Students should be given the skills to identify the intentions or meaning of this non-neutral speech.

The critical thinking literacy does not only teach the students to master basic skills such as understanding, predicting and summarizing, but training students to be critical in every context of the speech they receive. This critical thinking ability is absolutely necessary for students and intellectuals, just because every opportunity they will decide on various issues, it is either related to their field of science or social problems.

It has the purpose that the lecturer should be able to develop a pragmatic learning tool oriented problem-based learning which is appropriately applied with the needs of lecturers and students [6]. By having the right learning tool, the learning direction will become clear and the learning objectives can be well-achieved [7-11]. Theoretically, the development of this learning tool becomes one of the guidelines in developing aspects of language especially on Pragmatics study. In addition, the results of this development also provides an overview of the phenomenon and reality of language that is no longer formed in structuralist educational texts.

II. METHODS

The development of this learning device used research and development model of 4D model (Define, Design, Develop, and Diseminate) proposed by Thiagarajan et.al [12]. In the

first year, the research conducted define and design stage. Through this research, it was investigated to know the needs of students and lecturers, the problems of using the language that could be used as material tools, and materials and strategies which were appropriate in Pragmatics learning course.

Subjects who became respondents at this stage were 40 students of the fourth semester of the Indonesian Language and Literature Education Study Program which programmed the Pragmatics learning course and lecturers at the Indonesian Language and Literature Education Study Program, Undiksha.

There were several steps conducted in this study. The *first step*, it observed the needs of students in the Pragmatics learning course and giving questionnaires to the respondents who have been set. The *second step*, it tabulated and analyzed descriptively quantitative students' answers. The *third step*, it identified the respondents who deserved to be informants. The *fourth step*, it conducted interview which was established informants and collected the data from documents. The *fifth step*, it transcribed the recording of the interview and analyzed it by using inductive transcription data and *the last one*, it reviewed syllabus and lesson plan of Pragmatics. The results of this study were a list political issues which were needed by the students in pragmatics learning course.

The results of this study were a list of conceptual analysis, indicators of competency achievement, study of the tasks students would be done, and the study of students' critical thinking skills, the ability of students to communicate, and problem-based learning in the literature study and findings which was relevant to the development Pragmatic devices. The learning contexts on field study was also used as materials for designing prototype learning devices.

The data that had been collected were processed descriptively and qualitatively. The result showed that the conclusion of the needs of students and lecturers in Pragmatics course. The data from the results of given questionnaires were analyzed quantitatively-qualitatively. Meanwhile, data from observation, interview and document recording were analyzed qualitatively. The stages of analysis started from identifying the results of needs analysis, documentation of appropriate learning materials, prototype preparation. Afterwards, the analysis of prototype learning devices in the panel group discussion was conducted to obtain a prototype fit conceptually. Discussion results were used as one of the basic development of prototype learning tool Pragmatic oriented problem-based learning.

III. FINDINGS

Based on the results of the identification of the lecturer and students needs in Pragmatics course, it can be seen that the needs of students and lecturers for the Pragmatics learning course were the availability of learning tools Pragmatic oriented problem-based learning model designed with systematic steps and easy to be understood by the students.

The learning tools consist of syllabus, lesson plan, textbook, learning media, and assessment. Syllabus and lesson plan were used as a tool of plans and arrangements regarding the content and lesson materials as well as the means and technique used to teach. This learning planning was used as a guidance in the implementation of teaching and learning activities. It consisted of the answer to these questions: (1) what will be taught; (2) what is the goal to be achieved; (3) how to carry out the learning activities; (4) how is time allocation in learning activity; and (5) how to know that the learning objectives have been achieved.

Another required tool is a textbook, in which it is a systematic set of materials that lecturers needed as a means of teaching and as well as students to learn. In Undang-undang Pendidikan Tinggi nomor 12 Tahun 2012, Pasal 12, Ayat 3 (the Law of Higher Education Number 12 of 2012, Article 12, Ayat 3) mentioned one of the obligations of lecturers is to write textbook as one of the learning resources for students. In addition, one form of appropriate teaching materials was developed in the learning as the presentation of teaching materials in the form of textbooks.

The development of learning materials in the form of textbooks can support individual and independent learning, facilitate student learning, and met the qualifications as a good learning material and that required the principles of learning development. By using textbooks, the students can learn more effectively. Lectures activity by using textbooks enabled students to learn actively, quickly, and with maximum results. So far, many lectures were designed to be classical, that was, assumed the ability of each students were just the same. By using textbooks, students during lecturing/learning process will have readiness and enable the acceleration of learning.

Students aware with high absorptive ability were given the opportunity to complete their learning tasks faster than the time specified. Students who had difficulty in learning would receive sufficient attention through the process of guidance and remedial teaching. Another development of teaching materials in the form of textbooks, which was also a requirement was the preparation of quality assessments tailored to the learning process. Assessment instruments were used as a basis to know the level of achievement of learning objectives. Assessment can be used as a reference by lecturers and students in measuring the success of learning.

Learning media in the form of powerpoint was also required by the students to the lecturer. Through the media used by the lecturer, the students became focus and understand the material described by the lecturer. Those five tools needed to be developed in such a way in order to create learning that was relevant to the needs of students and being able to provide meaningful results for students. That way, learning would really give satisfaction results for students' progress.

There were various materials and topic issues tested in this lesson. Based on the results of questionnaires, materials and topics of problems that can improve the understanding of the concept and the ability of critical thinking of students, namely (1) historical material of pragmatics development with the topic of the issues raised "Why Pragmatics can not develop from 1938 when it was introduced by Morris at that time, 90% student respond positively to this material, (2) the material of pragmatics relation with other linguistics on the topic of the

question raised "Why Pragmatics can explain the broader utterances of Semantics" and explain by example that one day Sociolinguistics can support the study of Pragmatics, 88% student respond positively to this material, (3) matter Determinants of intent: text, context, and the context of the topic raised "DP", 90% student respond positively to this material, (4) the material nature of deixis in the study of Pragmatics wit the topic of the issue raised" pay it today and it is free for tomorrow", 87% student respond positively to this material, (5) the material nature of speech acts with the topic of the issues raised "the speech acts of Lecturer in learning activities" 92% student respond positively to this material, (6) the material presupposition, implicature, and inference in the study of the pragmatic to the topic of the issues raised "presupposition, implicature, and inference speech of Cak Lontong Show" 92% student respond positively to this material, (7) the material principles of cooperation in the study of Pragmatics to the topic of the issues raised "speech of students in the interaction of presentation and discussion in the classroom" 90% student respond positively to this material and (8) materials politeness principle in pragmatics study to the topic of the issues raised by the topic of "speech of lecturers and students in teaching and learning activities" 90% student respond positively to this material.

The results of questionnaire and interview showed that there were various materials and political issues needed in this lesson. The issues needed were; (1) matter determinants of intent: text, co-text, and the context of the topic raised "Negara Kesatuan Republik Indonesia harga mati" 93% student respond positively to this material, (2) the material presupposition, implicature, and inference in the study of the pragmatic to the topic of the issues raised "presupposition, implicature, and inference speech of Ahok in "*Kepulauan Seribu*", 98% student respond positively to this material (3) the topic analysis of speech acts of Majelis Ulama Indonesia Fatwa, 90% student respond positively to this material (4) implicatures participants of "Indonesian Lawyers Club" in the topic of "bring Jakarta back", 95% student respond positively to this material (5) implicatures language of politicians in the election of governor in Jakarta in 2017, 90% student respond positively to this material (6) implicatures meme politics during the governor election campaign period in Jakarta, 93% student respond positively to this material (7) implementation and violations of the principle of cooperation and civility in debates regarding governor election in Jakarta, 92% student respond positively to this material.

IV. DISCUSSIONS

The results of this study indicated that learning tools which were required by lecturers and students consisted of syllabus, lesson plan, textbooks, learning media, and assessment. The results of this study indicated that learning tools that was required by lecturers and students consisted of syllabus, lesson plan, textbooks, learning media, and assessment. Syllabus and lesson plan in this study was developed with reference to Presidential Regulation No. 8 of 2012 on the Indonesian National Qualification Framework which became the reference of Ganesha University of Education. The achievement of Kerangka Kualifikasi Nasional Indonesia-based learning was the ability gained through the internalization of knowledge, attitudes, skills, competencies, and accumulated work experience.

The components syllabus consisted of the components of the course identity, the content component that included course achievements, course descriptions, review materials, references, and the identity of the course learner. Components in lesson plan consisted of the components of the identity of the courses consisting of the names of courses/majors, names and codes of courses, semesters, sks, js, and pengampu course. Components of lesson plan content consisted of graduate learning achievement, final competency, study material, method, time, learning experience, criterion of indicator of rating weight, and reference. On this basis, it was identified the gap of critical thinking attitudes that can be raised in learning planning.

A syllabus component that can be loaded with a critical thinking attitude was on the learning achievement component and course description. Achievement of learning was expressed in the three elements of attitude. There were knowledge, and skills are divided into general and special skills. Behavioral elements was attitudes possessed by students in learning. The element of knowledge concerned on the mastery of student knowledge. Elements of skills characterized the ability of graduates of study programs to suit a particular field of knowledge/skills, while general skills characterized the ability of graduates according to the level and type of educational program.

The ability of thinkng critically can be explored into attitudes. In addition to the learning achievements, this ability was also explicited in the course description. Course description provided an overview of the course. This description was an explanation of the topics of socio-political issues to be studied in pragmatics courses.

In lesson plan, critical thinking skills was explicited in learning achievements, final competencies, learning experiences, attitude criteria, and assessment. In the final competency component was designed by several capabilities achievement that would be achieved in each meeting. In every meeting it was expected that students' critical thinking ability would increase, instead. In the component of student learning experience, it was also described the attitude that was expected to appear in the learning. Learning experience was manifested in the description of the learning stages to be done By students for one semester. The next component was the attitude criterion. Attitudinal criteria became a measure of attitudes that arise in learning process. In the assessment component, there were tasks that was explicitly demanded the emergence of students' critical thinking skills in reviewing the speech.

Syllabus and lesson plan were used as guidance in learning [13]. The task of educators was to plan the emergence of students' critical thinking skills that would be formed in learning. The designed syllabus and lesson plan were essentially a short-term plan to estimate the improvement of

critical thinking skills that would be implanted to learners in learning.

In preparing the syllabus and lesson plan, it should be clear both competence and attitudes that would be owned by learners, what to do, what to learn, how to learn, and how learners know that learners had the ability to think critically. The main thing to do was to identify a political case that can be raised in Pragmatics learning, integrating material and political case in learning planning, and preparing syllabus and lesson plan which was loaded with politician's speech causing political case.

For educators, integrating issues that required critical thinking in the syllabus and lesson plan provided clear guidance on instructional materials, the setting of methods, and the implementation of learning. Educators became more prepared in learning. Well-prepared learning with good planning was more effective in shaping the character of learners as planned. For students, through syllabus and lesson plan can be known the purpose of learning, the level of mastery, and the criteria of goal achievement [14-18].

Pragmatic material had a central role in intellectual, social, and emotional development of students and it was a supporter of success in understanding the purpose of communication. Pragmatic learning was expected to help students to recognize themselves, their culture, and other people's cultures, express ideas and feelings, participate in societies that use the language, and discover and use their own analytical abilities. The scope of the Pragmatic Constitution covered the component of spoken language skills in interactional communication. Based on the characteristics of the Pragmatic Court, the learning materials can be juxtaposed with political speeches that require critical review.

The loading of critical studies in textbooks was done through the identification of instructional materials and the assessment of critical speech in accordance with the material being taught. Identification was done so that there was a suitability between the critical issues and learning materials developed. To integrate critical attitudes into textbooks was that the material in textbooks needed to be prepared by adding critical matter materials into the components of the subject matter discussed in it [19], [20]. If the educator was merely following or implementing the lesson based on a textbook that does not integrate critical speech material, the learning activities would not reflect the inculcation of critical thinking skills in the student.

Designed in the planning of learning that has a critical attitude, the textbook needs to be adapted [21]. Adaptation that can be done was to include critical issues that were relevant to the substance of the material. Therefore, educators need not to change the existing subject matter. Educators can use existing subjects to develop students' critical thinking skills.

The textbooks oriented problem-based learning was a textbook that allows educators were able to present teaching materials in such a way that students are able to understand, determine attitudes, and behave based on the teaching materials. In this case, the textbook served as a tool for establishing competence, shaping attitudes, assessment tools, and the foundation for higher characters in subsequent material.

The result of the questionnaire regarding the use of instructional media as a discussion material resulted in other findings that were also urgent to be discussed. The result of students' response was generally related to media usage indicated that the discussion material presented through audiovisual media was able to combine visual and audio elements, so that the content of the material / message was more easily absorbed by the students [22].

The content of the material or message was more easily absorbed because it activated the two senses of the sense of hearing and the sense of sight. Both of these senses will form the emotions and mindset of students to the problems presented. Learning media can prepare students to understand the speech and respond to contradictory life. The results of this study at once diminished the notion that the media was only suitable for children. Learning media is very effective to use in recovery.

Assessment tools were also required by students. The assessment oriented problem based-learning emphasized the achievement of basic competencies by using various assessment techniques in an effort to monitor and determine improvement programs. This lesson did not only lead to learning on the theory or skills of students, but also included the attitude of planting a critical attitude.

The degree of success of understanding and internalization of matter and attitudes must be measurable through appropriate assessment, not just measuring the cognitive domain, but it must be capable of measuring both affective and psychomotor domains. Problem-oriented learning should also lead to the right type of assessment. The component of the assessment in learning should be able to be associated with the values of characters expected to appear in the lesson.

These learning tools were developed with problem-based learning, so that the result also showed that the improvement of understanding the concept and the ability of students to think logically and critically. Learning tools which were contained with an authentic problems was a great opportunity in shaping and developing awareness of educators and students toward the understanding of meaning of speech that can be shown in the teaching-learning process.

In a particularly pragmatic language approach, the meaning of speech is determined by the context and context. But unlike the political world like the pansus, the language formula is not always true, because the language becomes a game. In this political world language is a great "mask" that is used to cover up what it wants to cover. Through language there will be explicit and implied interests and how individuals or groups use language or "show" and "hide" interests. This political language is defined as communication involving political messages and political actors, or in relation to government power, government, and policy.

Political language is the language as a political tool that is the words that come out of the mouth of people who like to promise without a commitment to keep his promise. In politics, language is just a sweetener lip. This can be seen

during the campaign is certainly a lot of splatter words that are sweet on the lips only. However, aside from being a power tool the language can also come out in the form of words of wise advice preached by people who actually violate what he preaches. Therefore, critical thinking is needed to understand the meaning of speech from politicians.

The problems that leaded to the picture of the dilemma of the socio-political situation faced by society make it possible to be used in Pragmatics learning. The politicians' speeches in the socio-political life in Indonesia were full of veiled intentions, so it is suitable to analyze the meaning of the speech. To form a students' critical attitude requires learning that raises social dilemmas in social life [23]. In such social situations students were expected to be able to understand, sort out, and choose which actions would be taken to overcome the existing problems.

Problem-based learning is a learning model that uses real-world problems as a context for students to learn about critical thinking and problem-solving skills, and to acquire essential knowledge and concepts from subject matter, enrich and develop the knowledge, skills and attitudes [24]. The essential problem-based learning involves providing authentic and meaningful problem situations to students that can serve as a foundation for students to conduct analysis [25].

The point of learning is problem-solving. Defined that problem solving is part of a very important requirement because in the learning process, students may gain experience in using their knowledge and skills to be applied to solve the problems faced in everyday life [26]. "Real-world problems capture students' interest and are motivating", it can be interpreted that the daily problems can make students are interested and motivate students to learn.

Students who thought of a problem critically would not be satisfied with a clear or real solution, but it will suspend their judgment while searching for all relevant arguments, facts, and reasoning that can support good decision making. Argued that critical thinking uses the basic thought process to analyze opinions and produce which is more meaningful. Critical thinking and problem solving are closely related. Problem solving skills required critical thinking skills in exploring various alternative ways or solutions.

On the other hand, problem solving activity provided problematic situations that trigger the development of students' critical thinking potentials. It needs to be explored as a basis for developing both capabilities from the problem solving ability of learners can serve as an indicator of critical thinking ability.

V. CONCLUSION

Learning tools which were developed by lecturers should be based on predictions of future needs. In addition, the selection of models in the lecture also plays an important role in training students' skills in critical thinking. The results of this study indicated that learning tools needed to be designed and developed with problem-based learning. The focus of the development of Pragmatics learning tools oriented problem-based learning model included the development of syllabus, lesson plan, textbooks, media, and assessment.

This learning tool must also be synergized toward the problems related to the dilemma situation of social politic speech that was authentic and contextual. The learning model used learning tools which was oriented to socio-political problems that can improve students' understanding of the material concept of course being tauht and improve students' ability to think logically and critically in understanding speech.

The use of the language of politicians presented in this paper can be used as an alternative study materials in learning designed by educators to adapt socio-political events that enable learners to examine problems critically based on the material described in learning. This material is still limited to socio-political cases that can be associated with learning materials. Therefore, for other researchers is expected to conduct a more in-depth study related to the types of socio-political cases that allow use in directing students in thinking critically.

For the utilization of the learning tools, the learning tools was developed to meet the needs of the students and lecturers in Pragmatics course at the Department of Indonesian Langauge and Literature Education, Ganesha University of Education. Concerning its relevance to the lecture, this learning instruments needs to be reviewed when it is going to be used by the lecturers and the students outside our department.

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Prototype Development of Garsupati: A Single Access to Open Educational Resources

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***Abstract*—nowadays there are many stakeholders to provide content learning and courseware on their website with their platform. They use various platforms such as Open Course Ware (OCW), Learning Management System (LMS), Open Journal System and other website with custom development. The problem from current condition is the user must visit this each website to searching content learning or courseware. This activity made user wasting their time because there are no single access to OER. Another problem is no definition of the relationship between learning content. One of issue on OER is lack of learning content resources and guarantee quality of content. On this research, we address this problem with develop prototype portal Garda Sumber Pembelajaran Terbuka Indonesia (Garsupati) to give single access to Open Educational Resources (OER). On Garsupati, users can search and view learning content and courseware, give rating and comment to evaluate learning content, define relationship between learning content, contribute learning content and courseware. To enrich collection on Garsupati, apart from using user's contribution, Harvesting and Crawling techniques are used to collect the metadata of learning content and courseware. The scope of current research is until the prototype development of the Garsupati.**

Keywords : OER, Garsupati, Learning Content, Harvesting and Crawling

I. INTRODUCTION

Education plays an important role in improving the quality of human resources to improve the welfare of society. One important issue in education is education equity. The differences in the quality of human resources, technology and geographic distribution cause the unequal quality of education. However, with advances in technology, especially proliferation of computers and the Internet, educational equity issues solved sooner.

The internet plays an important role to distribute education and change the way of the people learns. Educational resources from textbooks and electronically educational resources can be accessed from Internet. On the other hand, educational resources produced from university, school, industry and government. The educational resources can be accessed and can be used to improve educational. This phenomenal we call it Open Educational Resources (OER).

OER is a source of teaching, learning, and research that is in the public domain or has been released under an intellectual property license that allows free use and reuse by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge[1]. Educational Resources consists of educational software and make it possible to be created and adopted for use in teaching.

OER project is supported by UNESCO, many academic community and practitioners around the world. For example, MIT Open Courseware has opened all course material by online and free. The World Bank has launch Knowledge Repository consist of collection of publication under Creative-Commons licenses. Some countries such as Brazil given mandate to open all educational resources and funded by government. The Indonesian Government through the Law No. 12 of 2012 on Higher Education chapter 79 verses 4 says that the Government develops open educational resources that can be utilized by the entire academic community. In addition, Higher Education through a circular 125 / E / T / 2012 requires the Undergraduates publish a journal as a graduation requirement. The real impact of this Act is the increased sources of Open Learning called Open Course Ware (OCW) and the emergence of student journals that can be accessed online.

The open educational resources materials are published by various groups using a variety of technologies, platforms and different formats. Some publish it only as a content and while the others publish it into the lecture series. In addition, they use many different technologies to publish content such as through MediaWiki, Moodle or OCW. The problem that arises is the difficulty in identifying and linking between the material and it is not easy to search in finding specific open source education. These shortcomings can be due to the lack of relevant information which support the shared open educational resources as well as the fact that the open educational resources are published through various sites which might be unknown to the users

The information provided on the content or source of learning could be in the form of metadata. One example of metadata used to describe the digital document is Dublin Core.

While in OER, there is LRMI that is used to define the OER objects. In addition, there should be a need to define the relationship between the content open the educational resources. The technology that can be used to overcome this problem is by using Resource Data Framework (RDF). RDF is a framework for defining the relationship between the data as a couple of properties and values. RDF document is written in XML format. By using RDF, the standardized syntax allows the exchange of information between sites.

In accordance with the above problems, the research will develop an OER portal using metadata standards and RDF. This system will be called the Garda Open Learning Resources Indonesia (a.k.a. Garsupati). Garsupati serves as a gateway to other open educational resources as well as defining metadata and relationships between learning content.

II. STATE OF THE ART

The emerging technologies, especially the increasing number of devices that can be used by humans to communicate and utilize the Internet are positive impacts on education. The use of technology is often associated with the use of electronic learning in education. Utilization of e-Learning support effective learning, while providing the freedom for students to learn anytime, anywhere and anyhow according to what they need[2]. Utilization content in E-learning would be more useful if it is used again or divided as other learning resources. The concept of sharing and reuse of learning resources is also known as OER.

OER provide free access to documents and media that are useful in the learning process. Research on the OER has been done mainly in providing solutions to share and reuse open educational resources that already exists. There are many websites provide open learning nowadays. But from existing research, it was found that many websites do not already provide interfaces or metadata schemes for the exchange of open educational resources[3]. This has an impact that the lack of use of open educational resources. This shows that the problems of integrating open educational resources are an important issue in the OER.

In Indonesia, there has been an initiated movement towards the OER. It is, as already declared on 7-10 May 2013 at Hotel Ayodya, Bali. In the declaration organized by APTIKOM, the Indonesia OER portal was also introduced. In this portal, adopting OER framework consisting of three domains, namely the Open Content, Open Courseware and Open Campus. While the general architecture of Indonesia OER consists of Data Layer, Application Layer and Presentation Layer[4]. Data Layer consists of learning resources from the library, research labs, universities and other sources. The Application Layer consists of E-Administration, E-Library and E-Learning. As for expanding access, the presentation layer is described that the access to OER can be done from multiple devices (Multichannel Access)[5]

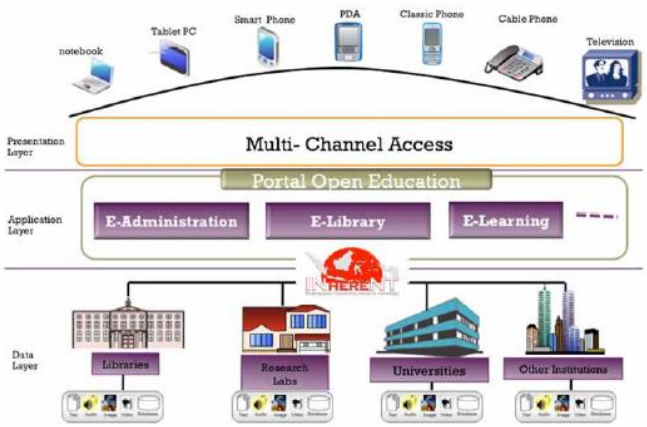

Figure 1. Open Education Architecture[4].

III. METHODOLOGY

We used ADDIE methodology to develop Garsupati. ADDIE consists of Analysis, Design, Development, Implementation and Evaluation. On analysis phase, we define functional and non- functional requirement, then on design phase we design user interface and database design. Then we developed the design to system and implement on Learning Object. The evaluation was done by verifying the correctness between the system requirements and the implementation.

A. Analysis

At this stage, an analysis towards the existing OER was done to get the OER content characteristics. Data collection methods for OER content are readily available through browsing to other OER systems and doing website crawling. In addition, we conducted a review to the standard metadata and the available RDF to match the characteristics of OER content. The goal at this stage is to get the standard metadata that defines the properties of OER content that can be generally applicable. Furthermore, we also obtained the standard relationship between OER content. These standards were used as material for determining the list of system requirements on Garsupati.

1. Functional Requirements

Based on the analysis that has been done, it can be formulated the Use Case Diagram as follows:

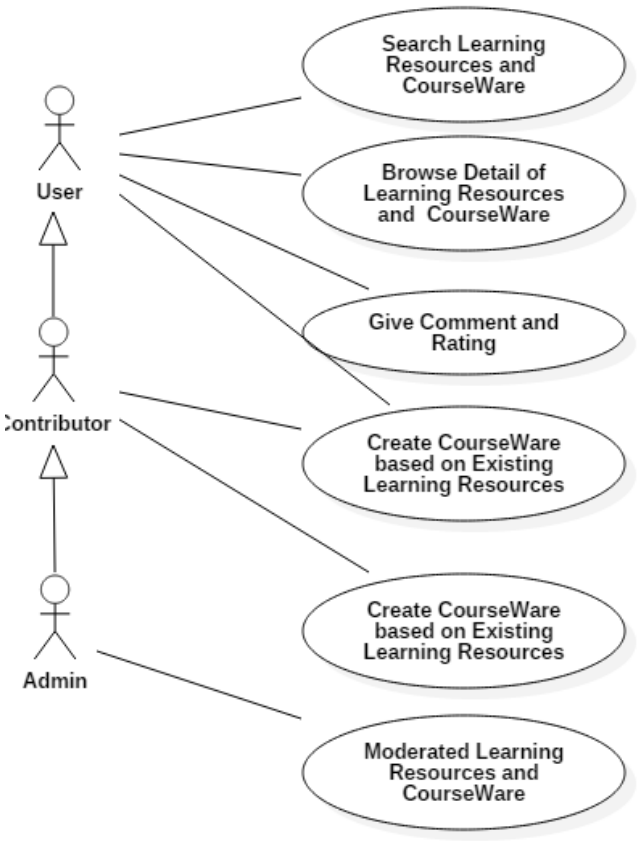

Figure 2. Use Case of Garsupati

1) Users can search for learning resources in the form of teaching content and courseware
   a. Users can search by field of science (subject area)
   b. Users can search by educational level
2) Users can view details of teaching resources and courseware
3) Users can leave ratings and comments on the content of teaching and the courseware
4) Users can report the teaching content and courseware that is not appropriate
5) Contributors can donate instructional content
   a. Upload a full teaching resources
   b. Upload teaching resources information that exists on other sites.
6) Contributors can create courseware by combining the resources of learning in Garsupati
7) Admins can moderate the teaching resources listed at Garsupati
8) The system can retrieve the data of the open learning sources
   a. Using harvesting techniques for systems using OAI protocol
   b. Use RSS
9) The system can provide recommendations of related topics

2. Non-Functional Requirements

List of non-functional requirements support the fulfillment of the functional requirements as follows:

a. The web-based system made in accordance with the aspect of Usability
b. Data instructional content using Dublin Core metadata standard

B. Design

At this stage, the list of system requirements obtained in the analysis stage is used to draft the Garsupati. The designs include architectural design, user interface design and design associated with communication between OER systems that exchange metadata.

C. Development

The designs that have been obtained at the Design stage are developed by encoding using predetermined tools. Garsupati system is built using the programming language PHP, My SQL database, Metadata Parser using Java, and the provided service is published using GlashFish Web Server. OAI protocol is also implemented at this stage.

D. Implementation

Garsupati system is implemented on the server and connected to other OER. Users will do browsing and searching through Garsupati. Garsupati provide the OER content searched results that link to the other OER content.

E. Evaluation

The evaluation was done at each stage above for improvement during the Garsupati development. However, in the final stages of the overall evaluation was also conducted to ensure the developed Garsupati system meets the functional requirements that have been defined previously. Evaluations undertaken include:

a. Compliance with Functional Needs
b. Compliance with Non-Functional Requirements
c. Suitability standard metadata and RDF

IV. RESULTS

A. Database

Garsupati database consists of entities whose function is to store learning content and courseware. Garsupati does not save the entire content, but it only saves the descriptions in the form of metadata. The learning content refers to the original source.

B. Data Collection Method

a) User Contribution

Learning content obtained through user contributions. Users, who have learning content, can contribute their content in Garsupati. Users who know the source of quality learning can also contribute the information into Garsupati.

b) Harvesting

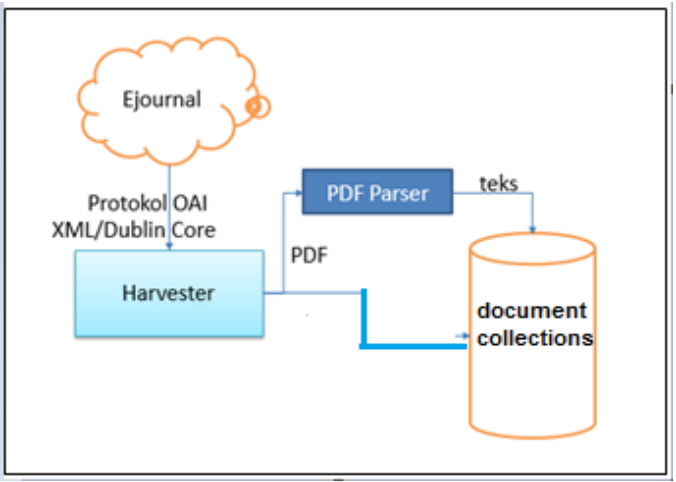

Figure 3. Harvesting Architecture

Harvester aimed at harvesting (collecting) metadata from OAI link. Harvester produces the journal metadata to XML format. Then the file is parsed and stored into the database. Content contained in XML form of the title, abstract and keywords. Overall, there are no documents in the XML. To obtain the full text document then a crawling based on the XML link is done to the entire document. If the documents can be obtained the document will be parsed into texts and stored into the database.

In this study, the harvester is implemented using Java programming language, Web Server Glassfish and JOAI library. Here is a piece of program code in doing the harvester procedure.

```
URL url = new URL(uri);
System.out.println(new Identify(url));
OAIReader oaiReader = new OAIReader(url,
(String)null, (String) null,
(String)null, oai_dc");
```

Program code snippet XML parsing section is as follows.

```
InputStream input = new
ByteArrayInputStream
(record.getMetadata().getBytes("UTF-8"));
org.apache.tika.metadata.Metadata
metadata = new
rg.apache.tika.metadata.Metadata();
ParseContext pc = new ParseContext();
ContentHandler textHandler = new
BodyContentHandler();
DcXMLParser dcXMLParser = new
DcXMLParser();
dcXMLParser.parse(input, textHandler,
metadata, pc);
```

The results from harvesting proccess is a metadata Dublin Core used to do document collection inGarsupati. In the Garsupati, the learning content is just a metadata content, not the full content. If user want to see the detail of the learning content, user just need to follow the provided link on the metadata content.

C. Garsupati Prototype

a) Main Page

Figure 4. Main Page of Garsupati

Garsupati main page is the first page that will be viewed by the user. The main page contains brief information about Garsupati and search pages. This search page is the user entrance to search all the open educational resources information recorded on Garsupati. After writing the keywords and pressing the search button, Garsupati shall display a list of open educational resources and its related courseware.

b) Learning resources page and CourseWare

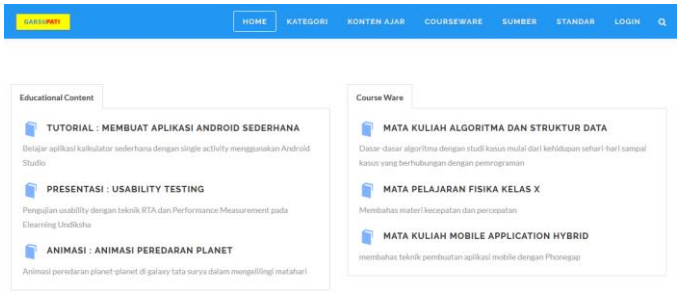

Figure 5. Learning Resources and CourseWare

On this page, it is shown a list of teaching resources and courseware that is available in the Garsupati website. The source of teaching materials and courseware comes from user contributions and from websites crawling done by Garsupati system. The materials here could be the actual materials or only certain links to learning resources. Courseware is a collection of learning resources that are connected with each other based on certain topics and sub-topics.

D. Home learning resources and CourseWare

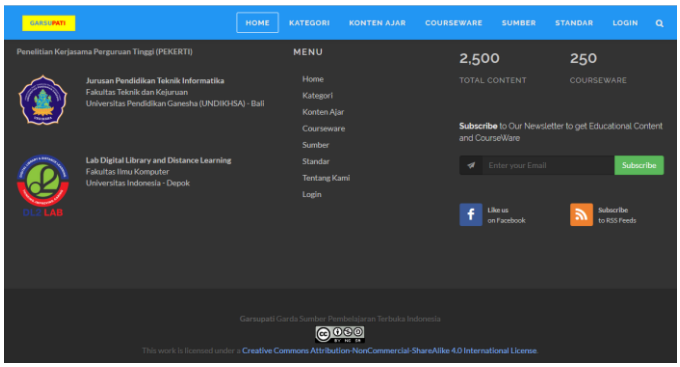

Figure 6. Licenses and Footer of Garsupati

On this page, Garsupati displays links related to cooperation, menus and lists of licenses. The Garsupati license adopts a Creative Commons license with the type of license: Attribution, Non-Commercial and Share Alike.

E. Category on Garsupati

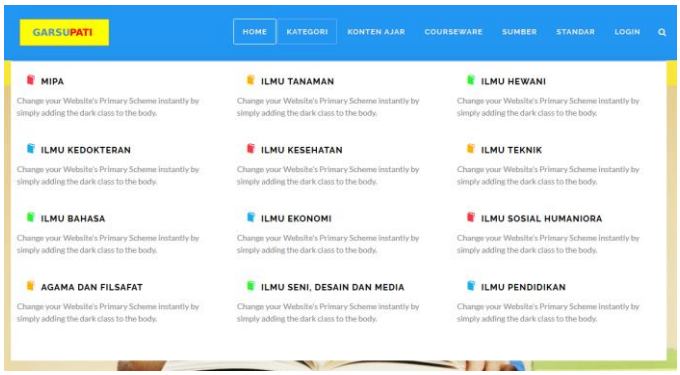

Figure 7. Category on Garsupati

This page displays the menu listing categories of the available resources and courseware. The way it is categorized is adopted from the science categories set by the Higher Education. Once this menu is clicked, it will display a list of sources of teaching and the appropriate courseware discipline.

F. Contributions to the Content Learning

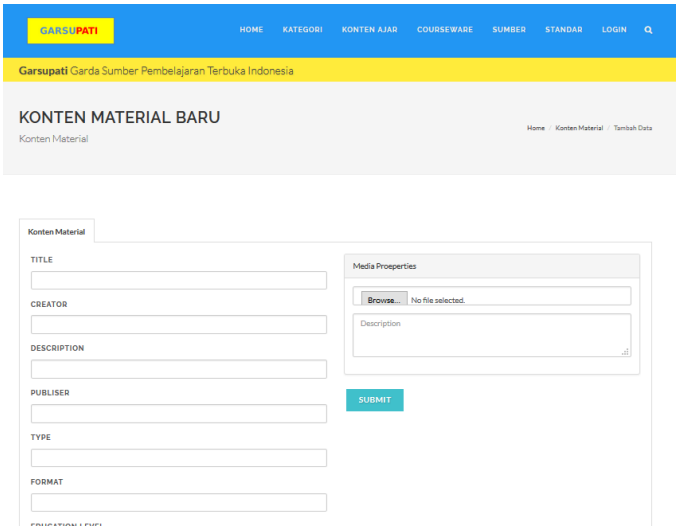

Figure 8. Contribution to Garsupati

Users can contribute their own content / material to be shown on the website. The content source can be one's own or a reference to another content source.

V. CONCLUSION

This research has carried out the analysis of open educational resources such as standards related to open educational resources that already exist, the development of systems and content open educational resources that already exist in Indonesia. Based on this analysis, subsequently designed functional and non-functional requirements were gathered as a reference in developing Garsupati system. The standards used in describing learning content refer to the Dublin Core standard. At this research stage, the Garsupati system prototype has been done. The main feature in Garsupati are single access to OER, On Garsupati, users can search and view learning content and courseware, give rating and comment to evaluate learning content, define relationship between learning content, contribute learning content and courseware

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Finding Similarities and Differences: An Implementation of Information-gap Game in Teaching Speaking

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***Abstract*— This study aimed at investigating whether or not there was significant effect of information-gap game technique, specifically finding differences and similarities, on the speaking competency of the tenth graders in a high school in Bali. The present study was an experimental research applying *posttest-only control group design.* Class X2 and X3 were chosen as the samples of this study. Class X3 that consisted of 28 students was assigned as the experimental group and class X2 that consisted of 25 students was assigned as the control group. Speaking test, scoring rubric and lesson plan were used for collecting data in this study. The data were analyzed by using descriptive and inferential analysis. The hypothesis testing showed there was significant effect of information-gap game on the students' speaking competency.**

Keywords*— information-gap game, teaching speaking

I. INTRODUCTION

Speaking is an important competency which is used to communicate with others through speech. It involves communicative performance, grammar, pronunciation, vocabulary, etc. Speaking is the process of expressing ideas, feeling or opinion to others in oral. In relation to expressing ideas, feeling or producing, receiving and processing information [1]. Harmer states that there are three main reasons for getting the students to speak in the classroom, namely (1) speaking activities provide rehearsal opportunities – chances to practice real-life speaking in the safety of classroom, (2) speaking tasks in which students try to use any or all of the language they know, and (3) when they have opportunities to activate the various elements of language that they have stored in their brain, they will be able to use those elements fluently without very much conscious thought [2].

In order to master speaking English, there are many factors that influence the students' competency. Gardner in Shuang states that individuals are motivated both internally and externally. Internal motivation comes from inside of the person or learner. While, external motivation comes from outside of the person or learner. One of the external motivations that influence the students' speaking competency is the class atmosphere that created by the teacher. To create the good atmosphere in the classroom, the teacher should develop the techniques in teaching. Developing techniques to motivate students is very important to every teacher because the more motivated the students are the harder they will work to increase their development of English learning [3]. Teaching and learning process is conducted based on the activity with the several characteristics, such as: 1) interactive and inspiring, 2) enjoyable, challenging and motivate the students to actively participate, 3) contextual and collaborative, 4) giving the chance for students' initiative, creativity, and independency and 5) appropriate with the students aptitude, interest, ability and the development of their physic and psychology [4].

Relating to the teaching and learning situation in the classroom, innovative teaching strategy is one of the way to create the effective and interesting learning and teaching process. One of the ways is using games. Game is a kind of entertaining and challenging activity which allows the learners play as well as interact with other learners [5]. Game has a crucial role in improving students' learning motivation [6]. When a game implemented in the classroom, the teacher could provide a useful and meaningful language context. The learners want to take apart, and in order to do the game, the learners should understand what others are saying and they must speak in order to express their own point of view or gave information [5].

By using games in the classroom, the students learn to speak without realizing that they are learning it. It makes the students not afraid in making mistakes when they speak in the classroom. Shaping a learning task in the form of a game often piques the interest of learners who see it as something different to what they normally do in class [7]. Students will learn better if they experienced progress in learning, and games provided opportunities for students to practice and eliminate their fears [6].

There are many benefits of using games in the classroom. According to Nguyen and Khuat in Taheri, using games provide relax and fun environment for learners. It will motivate them to voluntarily involvement in classroom task. In playing games, the learners give attention on the message not on the language [8]. They acquire language unconsciously, with their whole attention engaged by the activity [9]. Freeman in Taheri states that learners enjoy the games because games provide healthy and constructive competition. He also argued that games have real life communication features because players are required to exchange ideas with each other [8]. A good

designed game could facilitate learners in improving their speaking ability due to real communication context created in the classroom.

Communication games are defined as a set of games that is designed to help student learning English with joyful activities and it is aimed to get learners talk as fluently and quickly as possible [10]. Communication games are the way to get the students to speak in the classroom. They will enjoy and interested with the class because this games can stimulate students' motivation to learn. Besides increasing the students' interest, games also makes the students learn in fun situation and create the good social interaction among the other students in the classroom. It makes the students easy to talk in the class without being worry and shy. Harmer states that information-gap game is one kind of communication gap games [2].

Information-gap game is game that depends on an information gap. It means that one student has to talk to a partner in order to solve a puzzle, draw a picture, put things in the right order or find the similarities and differences between the pictures [2]. Due to many kinds of information-gap game, the researcher focused on finding similarities and differences between the pictures game. It is because finding similarities and differences game is designed to get students talking in detail about the differences between the pictures [2]. Hence, by using finding similarities and differences game in the classroom the students would be able to speak without thinking too much about the mistakes that they would do and focus on the detail about the pictures.

The power of using information-gap game in teaching English was proved by many studies. One of them is a research conducted by Cahyanto, *et al*. in SMA Negeri 2 Madiun [11]. Based on the research, it was found that information-gap game was able to give effect to the students' speaking ability. The game also increased the students' interest and participation in learning English.

Based on the situation and phenomenon which were explained previously and the strength of information-gap game which was proved by the result of the previous study, the present study investigated the effect of using information-gap game on speaking competency, especially for the tenth grade students in SMA Negeri 1 Sawan in academic year 2016/2017.

II. RESEARCH METHOD

The research took place at SMA Negeri 1 Sawan in Sawan sub-district, Buleleng Regency. The research was conducted from 17th of April 2017 until 13th of May 2017 in academic year 2016/2017. This research was conducted in 7 meetings for both of the two groups.

This research was an experimental research which was proposed to figure out whether there is any significant different in students' speaking competency that were treated differently or not. This research used *posttest-only control group design.* The experimental and the control group equated randomly.

After determining the experimental and the control groups, the experimental group was given treatment, they were taught by using information-gap game and control group was taught by conventional technique (presentation, practice, produce technique). To know the effect of the experimental group that taught by using information-gap game and the control group that taught by using conventional technique, both of them were given posttest. The result of the posttest calculated in order to know the effect of the treatment that was given to the experimental group.

The population of this study was the tenth grade students in SMA Negeri 1 Sawan that consisted of about 203 students, who were divided in 8 classes, namely Class X1, X2, X3, X4, X5, X6, X7 and X8.

Through the cluster random sampling, the classes determined as the samples were X2 and X3, where X3 that consisted of 28 students as the experimental group and X2 that consisted of 25 students as the control group.

There were two variables on the present study, independent and dependent variable. The independent variable of this study was information-gap game and the dependent variable was students' speaking competency.

There were three instruments that were used in this study, namely 1) speaking test, that was given to the students after the treatment. The test was in the form of speaking test. The test was in the form of performance test where the students should perform based on the instruction in the test, 2) scoring rubric, it was used as a tool in doing assessment. The rubric that was used in this study was analytical scoring rubric. 3) lesson plan, it was used as guidance for the teacher in teaching the lesson for experimental group and control group.

Before treatments, the researcher designed the instrument first. The blueprint of the speaking test was designed. The standard competency based on KTSP curriculum was "expressing meaning in short functional text and simple essay about narrative, descriptive and news item in daily lives context". The basic competency was "expressing meaning in simple monologue text by using various written language accurately, fluently, and acceptably in daily lives context in form of: *descriptive* text". Then, based on standard competency and basic competency the indicators were using simple present in describing person, identifying characteristics of the people who are described, using positive, comparative and superlative degree and applying positive, comparative and superlative degree to compare characteristics of the people who are described.

In order to check the validity and the reliability of the instruments, the instruments were checked by the experts then they were tried out in SMA Negeri 1 Sawan. To check the validity, Gregory formula was used and to check reliability Hyot formula (inter-rater) was used.

In conducting this study, there were several procedures that were conducted. They were: 1) preparing the instruments, 2) consulting the instruments to the experts, 3) checking the validity and reliability of the instruments, 4) selecting two classes as the sample, 5) deciding the experimental group and the control group, 6) giving treatment to the two samples. The experimental group was treated by using information-gap game, while the control one was taught by using conventional technique, 7) conducting posttest for both of the groups, and 8) analyzing the result of the posttest.

The result of posttest from both of the group was analyzed by using descriptive analysis (mean, median, mode, standard deviation) and inferential analysis (test of normal distribution, test of homogeneity and hypothesis testing). The data was tested by using SPSS Statistics 17.0.

The statistical hypothesis that was used in this study was null hypothesis (H_0).

$H_0 : \mu = \mu_0$

$H_1 : \mu > \mu_0$

Where:

$H_0 : \mu = \mu_0$: there is no significant effect of information-gap game on the speaking competency of the tenth grade students of SMA Negeri 1 Sawan.

$H_1 : \mu > \mu_0$: there is significant effect of information-gap game on the speaking competency of the tenth grade students of SMA Negeri 1 Sawan.

III. FINDING AND DISCUSSION

Before conducting the treatments, testing normality and homogeneity were conducted in both of the groups. The tests were conducted in order to find out whether the groups were normally distributed and homogeneous or not. The students' last speaking score was tested by using SPSS Statistic 17.0.

To test the normality of the data, Kolmogorov-Smirnov statistic was used. The students last speaking score was used in order to test the normality between class X2 and X3. The result of normality test showed that significance value of Experimental group was .200 and the significance value of Control group was .200. Those results mean that the data obtained in this study normally distributed.

Then, Levene's statistic used to test the homogeneity of the data. Based on the result, the significance value was 0.376. It means that the variances between groups were homogeneous.

Before conducting the treatments, the instruments that would be used were analyzed in order to know whether the instruments valid and reliable or not.

The instruments were checked by the judges before they were used in order to know whether the content was valid or not. The result of the content validity was 0.75. It means that the instrument was valid and considered at high level. Then, the instruments were revised. The result of the content validity after doing revision was 1.00. It means that the content of the instrument was valid and it considered at very high level.

After conducting try out at XI IPA1 and checking the result by using inter-rater HOYT'S Formula, the result of inter-rater reliability was 0.940. It means that the instrument was reliable and can be used as a research instrument.

After making sure that the instruments were valid and reliable, the treatments were conducted. Then, the posttest was conducted in the same for experimental group and control group. Then, the result of the posttest was analyzed in two phases, descriptive analysis and inferential analysis.

Descriptive analysis was conducted to know the mean, median, mode and standard deviation of the two groups. After conducting descriptive analysis of the two groups, the result can be seen in the Table 1.

Table 1. The Result of Descriptive Analysis of the Two Groups

Descriptive analysis	Experimental	Control
Mean	82.7	79.1
Median	84.0	80.0
Mode	84.0	80.0
Standard deviation	4.8607	5.0311

In addition, the distribution analysis of data measured in posttest then presented in form of diagram as follow:

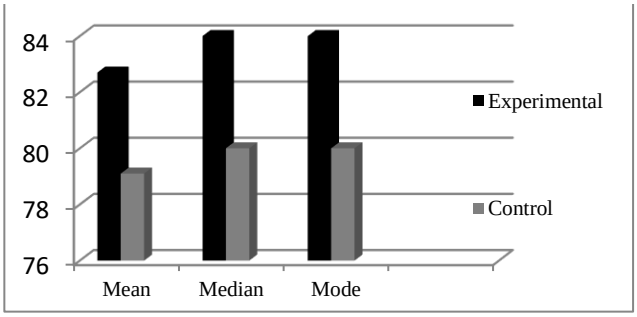

Fig.1. Distribution Analysis of Data Measured in Posttest

Based on the result shown in the Table 1, it can be seen that the mean score of the experimental group was 82.7, while the mean score of the control group was 79.1. It indicated that the experimental group achieved higher score than control group in the term of speaking competency.

After conducting descriptive analysis, inferential analysis was conducted. This analysis was conducted to find out whether the differences of mean score of the two samples were significant or not. Before conducting hypothesis testing (t-test), the data that would be analyzed should be in normal distribution and the variance should be homogeneous. Hence, normality and homogeneity test were the first two test conducted.

Test of normal distribution was conducted in order to know whether the data obtained was normally distributed or not. Kolmogorov-smirnov statistic was used to find out whether the data were normally distributed or not. Based on the result, the significant value of the experimental group was 0.082 and the control group was 0.56. The results of the two groups were exceeded 0.05. Thus, it means that both of samples were normally distributed.

Test of homogeneity had purpose to know whether the data was considered homogenous or not. Levene's statistic was used to test the homogeneity of the data. The result showed that the significant value of the data was 0.864. It was exceeded 0.05. It means that the data were homogeneous.

Then, hypothesis testing was conducted in order to find out whether the differences of mean score of the two samples were significant or not. The hypotheses were:

$H_0 : \mu = \mu_0$: there is no significant effect of information-gap game on the speaking competency of the tenth grade students of SMA Negeri 1 Sawan.

$H_1 : \mu > \mu_0$: there is significant effect of information-gap game on the speaking competency of the tenth grade students of SMA Negeri 1 Sawan.

The data of the posttest were analyzed by using descriptive and inferential analysis in SPSS 17.0. Based on descriptive analysis, the mean score of the experimental group was 82.7, while the mean score of the control group was 79.1. It means that the experimental group achieved higher score than control group. Furthermore, the result of inferential analysis showed that the value of $t_{observed}$ was 2.625. It was higher than the value of the $t_{critical\ value}$ 2.007.The result indicated that information-gap game gave significant effect on students' speaking competency of the tenth grade students in SMA Negeri 1 Sawan in academic year 2016/2017.

During the treatments, the teacher was guided by lesson plan. The lesson plans were for both experimental group and control group. The lesson plan for experimental group used information-gap game (finding differences and similarities game) as the technique, while lesson plan for control group used PPP as the technique. There were six times treatments, both in experimental group and also in control group. The topics that were taught were describing people and degree of comparison.

The process during the implementation of information-gap game was running well. In the first meeting of the treatments, for experimental group the researcher used information-gap game for the first time. There were several steps in conducting information-gap game in experimental group. The first step was giving knowledge. The teacher gave knowledge about describing people for the students. After the students got knowledge about describing people, the teacher explained about the use of information-gap game to help the students in learning speaking.

The next step was the teacher divided the class into two. Then, the teacher gave the students the pictures of find similarities and differences game. Teacher explained that the students must not look at each other's picture. After that, the students did the activity. Student A started to give information for students B, then students B also gave his/her information for student A. They should find the similarities and the differences between the pictures. After finishing, one or more pairs performed in front of the class to tell about the similarities and differences between the pictures that they got. The steps were the same from the first meeting until the sixth meeting, but the differences were in the topics that were taught.

In the first meeting, the topic was about the clothes. The students learned how to describe people based on the clothes that they wore. In the second, third and fourth meeting, the topic was appearance. The students learned how to describe people based on the characteristics of the appearance. Then, in the fifth and sixth meeting, the topic was degree of comparison. They learned about the use of positive, comparative and superlative degree and how to compare the people appearances. The treatments were focused on the students' speaking competency. They did not only learned about the theories but also learned about how to speak and how to tell about people description.

In this meeting, the students faced some problems in following the steps of information-gap game. They were difficult to speak spontaneously because they never do that in the previous meeting. They could not speak English well and their pair also could not understand what they said. They looked reluctant to practice the game because this game was new for them and they did not understand the game yet. Relating to the problems, the teacher described the games in detail and then gave example for the students, so they would understand the steps and could play the game well.

The problem also happened in controlling the class. Because they did not understand and could not follow the game, they made noisy and difficult to be controlled. The teacher solved the problem by giving instruction to the students to keep silent. When the students still made noise, the teacher told that she would gave punishment for the students who made noise. Then, they started to follow the activities, even when they did not understand yet about the game.

In the next meeting, the teacher explained more detail about the game before the game was implemented. Some of the students already understood with the game and could follow the game well. They could speak with their pair to find the differences and similarities between the pictures. They used expression that had been tough and practiced to speak spontaneously. But, some other students still confused and could not follow the game. For some students who still had problems, the teacher directly went to the pairs and explain also gave example how to play the game.

Fig.2. The First Pair of Pictures Used (a)

Fig.3. The First Pair of Pictures Used (b)

After implementing information-gap game for six times, the students were already understood about the game. They followed the game well. They also described the pictures well. They looked enthusiast with the lesson. They also enjoyed the class. They spoke spontaneously with their pair. They found similarities and differences between the pictures that they got. During treatments, the researcher used 3 pairs of pictures. The first pair (picture 2 and picture 3) was the pictures about family, there were 6 people in the pictures with different kind of appearances. Picture 1 and picture 2 were similar but they were different. The students described the pictures and find the differences and similarities between picture 2 and picture 3 about the clothes and based on the degree of comparison. This pair was used in first and fifth treatments.

Fig.4. The Second Pair of Pictures Used (a)

Fig.5. The Second Pair of Pictures Used (b)

The second pair (picture 4 and picture 5) was the picture of a family. There were 7 people in the picture. The students should find the similarities and differences between the picture 4 and picture 5 about the appearance and based on degree of comparison. This pair was used in the second and sixth treatments. The last pair (picture 6 and 7) was also the picture of family which included 4 people. The students should find the similarities and differences between picture 6 and picture 7 based on the appearances.

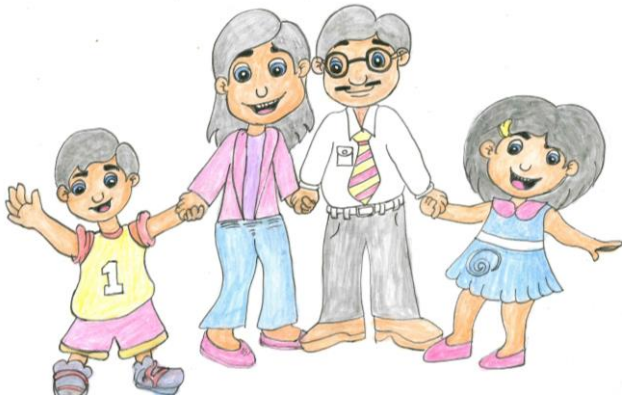

Fig.6. The Third Pair of Pictures Used (a)

Fig.7. The Third Pair of Pictures Used (b)

Then, after the students already understood and could describe the picture orally, the posttest was conducted. In the posttest, students' pronunciation, content, accuracy, fluency and vocabulary were scored and analyzed. In the process of analyzing the students' pronunciation, content, accuracy, fluency and vocabulary, the students still had some problems. Those problems were related to the students' pronunciation, accuracy, content, fluency and vocabulary.

First, the students had some problems in pronouncing some words. Most of the students did mistakes in pronouncing the words. Both of the groups had problem in pronouncing words. The number of words that were mispronounced was quite similar between the experimental group and control group. The number of words that were mispronounced in experimental group was 35 while the number of words that were mispronounced in control group was 37. But the frequency of error in control group was higher than experimental group. For example in the word "has". In experimental group the

frequency of error was 12 while in control group the frequency of error was 20. Most of the students in experimental group had problem in pronouncing the word "has", "taller", "old" and "hair". Meanwhile the students in control group had problem in pronouncing the word "has", "higher", "taller" and "old".

Second, the students in experimental group and control group did some errors in accuracy. They had problem in using grammar. There were some grammatical errors that they had done. Based on the analysis of posttest, the number of error in using the suffix 's' in experimental group was 10 and the number of error in using the suffix 's' in control group was 11. Then, the number of error in sentence structure was 6 in experimental group, while in control group the number of error in sentence structure was 28.

Third, the students' problem was related to content. In experimental group and control group, most of the students already spoke with relevant content. But, there were some students spoke irrelevant content. The test was given by the researcher was describing 2 people and compare them, but some students only describe a person, the other students already described two people but they did not compare them. Most of the students described their parent, brother, sister and also their friends.

Fourth, the students in both group faced any problem in their fluency. Most of the students in experimental and control group spoke at normal speed, not very slow and not very fast. There were some students who spoke very fast because they memorized the text so hard. Meanwhile, there were some students who spoke very slowly with long pause. They seemed so nervous and unconfident.

Lastly, some students' vocabulary needed to be improved. By seeing the result of the posttest, the students in experimental as well as in control group used the appropriate vocabulary. They also used interesting and vivid word choice. But, there were some students who spoke by using monotonous sentence style. For example "my mother has white skin. My father has brown skin. He has black hair. She has long hair."

Then, according to theoretical review which was stated in previously, it was stated that speaking is the process of expressing ideas, feeling or opinion to others in oral. Speaking is an interactive process of constructing meaning that involves producing, receiving and processing information, and the presence of speaker and listener [1]. By implementing information-gap game, the students expressed their ideas, feeling and opinion in oral to their pair. In the process of information-gap game implementation the students produced, received and processed the information that were given by their pair and found similarities and differences between the pictures based on the information that they got.

Hadfield states that a game is an activity with rules, a goal and an element of fun. Games will make a fun and relaxing learning atmosphere [12]. In line with this theory, during implementing information-gap game, there were several rules that should be followed by the students, such as 1) after the teacher gave the pictures for each pair, students A should not show their picture to students B and vice versa, 2) the students should speak to give their information to their pair, 3) the students should find the similarities and differences between the pictures that they and their pair have, 4) the pair that got the most number of similarities and differences was the winner and get reward, in the classroom, the teacher gave additional score as the reward, 5) the pair that got the worst number of similarities and differences got punishment from the teacher and the other students, during the class they got direct punishment, such as singing in front of the class. During the treatments, the students looked so fun and relaxed in following the class activities. They could speak without being worried in making mistakes, because they only spoke with their pair. That situation made the students spoke more than usual and practiced to speak as much as possible. Thus, it could be assumed that between the theory and the implementation of information-gap game were appropriate.

The result obtained in this study was the same as the results of some studies that related. The result of the study which conducted by Jondeya proved that information-gap game gave significant effect on students' speaking ability [13]. This present study was also supported by the research conducted by Nuraeni which found that there was significant difference between students' score in learning speaking by using information-Gap and without using information-Gap. In conclusion, using information-Gap is effective and applicable for teaching speaking at the second grade students of MTs Khazanah Kebajikan Pondok CabeIlir [14]. There were some differences between the present study and the previous studies, such as, the number of sample and the setting of the study. Even there were some differences between the previous and the present study, the result of each study was similar.

The result of each study was information-gap game gave the significant effect on students' speaking competency. Thus, it could be concluded that information-gap game gave the significant effect on students' speaking competency through its possibility in giving most beneficial effect. The beneficial effect that was given by this game such as could make the students speak spontaneously without text, could give the students chance to speak in the classroom without feel worry with the mistakes, could make the class atmosphere more funny and enjoyable also made the students active. Moreover, after implementing information-gap game, the students' comprehension with the material (describing people and degree of comparison) and ability in using vocabulary about the topic that they talked were significantly influenced. It can be seen from the result of the posttest score which showed that the score of content and vocabulary were almost obtained by the students in experimental group were almost high.

IV. CONCLUSION AND SUGGESTIONS

Based on the t-test, it can be concluded that there was significance effect of information-gap game on speaking competency of the tenth grade students in SMA Negeri 1 Sawan. In relation with the previous discussion, the researcher proposed some suggestions, as follows:

For English teacher, Information-gap game is recommended for teaching speaking. This game could make the students more active in the classroom and practice their speaking during the class. There are some things that should be

considered by the teacher while using information-gap game in the classroom, such as 1) the teacher should describe in details about how to play the game because the students are difficult to understand the game, 2) the teacher should be able to control the class because when the students play the game, they will make noise and even disturb the other students.

For the other researchers who are interested in teaching English especially speaking, it is suggested to conduct other researches in different level of education, because this game is appropriate with all level of students.

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DEVELOPING *CASE-BASED LEARNING* ORIENTED BIOLOGY MODULE TO IMPROVE SENIOR HIGH SCHOOL STUDENTS' CRITICAL THINKING SKILL

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Abstract— **This study aimed to develop and validate the *Case-based Learning* module to improve the critical thinking skills of high school students. The development model used was the 4-D model that includes, define, design, develope, and disseminate. Module validation was conducted through validity test, practicability test, and effectiveness test which revealed that the module developed has a very high validity with an average score of 4.25 with a very high practicality with an average score of 4.21, and it has the effectiveness to improve critical thinking skills with an average value of the critical thinking skill test of 85.92. Result of t test get t value 22,567> t table (1,868) which means that there is a significant improvement of critical thinking skill of students after the implementation of the module. Thus, the module developed is valid, practical, and effective to improve critical thinking skill of high school student.**

Keywords— learning module, case-based learning, critical thinking skills

I. INTRODUCTION

Indonesian Government is faced with the low quality of education and mastery of science. An ideal learning process is designed to teach students as learning subjects with students' activity as its orientation to gain learning achievement in the form of proportional combination of cognitive, affective, and psychomotor. The teaching and learning of science at schools is supposed to involve attitude, process, product, and aplication aspects, so the students can experience an holistic learning process, understanding natural phenomena through problem solving activities, scientific method, and adapt scientific way to find new fact. Moreover, the recent trend in science learning is students are only introduced Biology as product, memorizing concept, theory, principles, with memory as its orientation.

The Program for International Student Assessment (PISA) in 2015 reveals that Indonesia was in the 69th out of 76 countries in the field of Science and Math. While, the Trends in International Mathematics and Science Study (TIMSS), shows that Indonesian students are in the 36th place out of 49 countries in terms of doing scientific procedure. In the last 10 years, PISA and TIMSS show almost similar result.

Some factors are responsible in determining the quality of students' learning achievement in science. One of those factors is learning material. Based on the result of in-depth interview with one of the Biology teachers and students in eleventh grade of SMAN 1 Tabanan, learning materials used in the school were in the form of reference book and student worksheet. Exercises provided in the students worksheet were only intended to make students to copy information from their reference book, which lead to students' low level of understanding to the material. The same phenomena could also be found in several other schools such as SMA N 2 Tabanan, SMA N 1 Kediri, and SMA N 3 Singaraja.

In order to optimize the learning quality, teacher should make innovation in the learning process. Turer and Kunt (2015) stated that a creative teacher has big role in creating an optimal and long term learning on science [1]. One of the innovation is developing learning module. Learning module has more complete material and the instruction was also more focused than the regular textbook. By using module, students can practice their independence and reasoning ability. The module includes synchronized materials completed with project assignment as a facility to encourage students' participation in the learning process.

To overcome the problem on explaining abstract concept, module can be used as the learning resource because it contains illustration and more practical instruction. By giving cases, it is expected that the mudule can help students to understand abstract concept through the illustration and pictures.

Based on the prior observation, the use of module in SMA N 1 Tabanan was limited due to the lack module developed by the teacher in teaching Biology, especially for grade eleventh.

Based on above background, the researcher conduct a study entitled Developing Case-based learning Oriented Module to Improve Students' Critical Thinking in Senior High School. In

this study, the developed module was integrated with Case-based Learning (CBL) model, in which the students were expected to improve their thinking skill by solving real life related problems related. Case-based learning oriented cases provided in the module should be well-structured. Furthermore, Frederiksen (1984) proposed a well-structured scenario that covers various problems with clearly formulated and completed with formula to test the appropriateness of the answer [2]. This scenario is diference with the scenario of Problem Based Learning which is more ill-structured. The differences between well-structured and ill-structured problem can be seen the Table 1 [2].

TABLE 1. DIFFERENCES BETWEEN WELL-STRUCTURED AND ILL-STRUCTURED PROBLEM

Ill-structured Problem	***Well-structured problem***
1. The objectives are clear but hidden. 2. Unclear information needed to solve problem 3. Unexpected solution which leads to unconsistency of concept.	1. Clear objectives 2. All information needed are in the frame of scenario. 3. Consistent concept to solve the problem.

Case-based learning contains some cycles: Retrieve, Reuse, Revise and Retain [3]. The cycles of Case-based learning can be seen in Diagram 1.

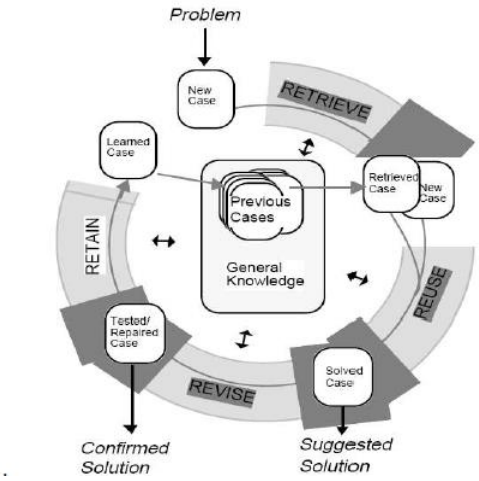

Diagram 1. Cycles on Cased-Based Learning

In the Diagram 1, the problem should be explored in retrieve cycle which then being reused in the discussion within the groups. The following cycle which is revise gives opportunity for the students explain their solution on the problem. At the end of the cycle, students are instructed to draw conclusion for the whole issues being discussed.

While Wood and Anderson had done study on Case-based Learning and revealed that the case-based learning method could improve teachers' skill in giving question effectively because cases could give opportunity for the teachers to think based on the reality [4]. In addition, Rybarczyk et al had stated that the use of case-based learning was very comprehensive with other learning objectives such as minimalize students' understanding and improving students' learning motivation [5].

II. METHOD

This development research used 4-D model proposed by Tiagarajan (1974), which consists of four phases: (1) define; (2) design; (3) develop; (4) disseminate [6].

In the first phase, the researcher defined the need and potential of the existence of module in the senior high school, especially related to the critical thinking skill in the eleventh grade students. The need and potential analyzed in the first phase were used as the basic information in designing the module to determine content involved in the module as well as the level of knowledge presented. The determination of the level of knowledge presented in the module was a crucial issue since the module should met students' characteristics.

The phase of developing module which was the third phase was done by using the design from the previous phase. The elaboration of topics and practical instruction included in the module were adjusted with students' characteristics, school facilities, syllabus, and time allocation for Biology subject in the eleventh grade. After developing the module, the researcher proceeded to the next phase which was disseminating. The dissemination was done through expert judgment and field test.

The developed learning module was tested through three stages, namely validity test, practicality test, and effectiveness test. Validity test was done for its content and construction. The validity test contained of three stages which were: (1) count the average score given by each validator; (2) count total score from the average scores; (3) convert the total score into qualitative score based on criteria that can be seen in Table 2 [7].

TABLE 2. VALIDITY CRITERIA FOR LEARNING MODULE

Score	Score Interval	Category
5	4,21≤Sr≤5,00	Very valid
4	3,41≤Sr≤4,20	Valid
3	2,61≤Sr≤3,40	Valid Enough
2	1,81≤Sr≤2,60	Not valid
1	1,0≤Sr≤1,80	Very Not valid

While the practicality test was aimed to measure its implementation by students and teachers in the classroom,

which was done through questionnaires for both the students and the teachers.

Effectiveness test was done through pre-experiment technique by conducting One Group Pre-test Post-test Design. Before conducting effectiveness test, the researcher had conducted test to measure students' level of critical thinking.

The subject of this study were Biology teachers, and 38 eleventh grade students of IPA 7 in SMA N 1 Tabanan in the academic year 2016/2017. There were 10 teachers/practitioners and experts involved in this study, consisted of 2 experts and 8 teachers/practitioners. The object of this research was the learning module.

III. RESULT AND DISCUSSION

Development research 4-D model proposed by Tiagaran consists of four phase: define, design, develop, and disseminate [6]. In this study, the researcher only conducted three phases which were define, design, and develop, while the last phase which was disseminate, was not conducted due to the limitation on given time.

In the first phase, the researcher defined learning requirements and analyze the learning objectives. There were five stages which were done in defining phase: (1) analyzing problems found in the school and curriculum, (2) analyzing students' characteristics, (3) material analysis, (4) instruction analysis, (5) specification of learning objectives.

The second phase was designing the module. The developed case-based learning oriented Biology module was referring to the core competency in the 2013 curriculum. The format of the module was also determined in this phase, in which the instruction for practical assignment used case-based learning model, which consisted of retrieving, reusing, revising, and retaining.

The third phase which was developing module resulted in module draft, validated and revised evaluation instrument based on the review from the experts. The phase of developing module included validation process from expert judgment and field test. Before conducting field test of the developed module, its instruments were tested by expert judgments to measure its validity. The experts consisted of two lecturers. The result of instrument validation can be seen in the Table 3.

The result of instrument validity presented in Table 1 showed that the quality of the developed instrument was categorized as relevan, in which the score was within interval 0,81-1,00.

After gaining the result of instrument validity, the researcher conducted validity test which was done through two parts, expert validation and empirical validation. The empirical validation was done by the Biology lecturers and teachers. Table 4 showed the result of validity test for the developed learning module. The test was done to measure both content and construct validity. The average score of the validity was 4.25, which was categorized as valid. Thus, the developed module is qualified to be implemented even though there were several suggestions for the improvement of the module.

TABLE 3. THE RESULT OF INTSRUMENT VALIDITY TEST

No	Research Instrument	Score			
		Validator 1		Validator 2	
		KVG	Category	KVG	Category
1	Validation sheet (Module and Evaluation Instrument)	0,81	Relevan	0,81	Relevan
2	Response of teacher quietionaire toward learning module	0,94	Relevan	0,94	Relevan
3	Response of teacher quietionaire toward learning module	1	Relevan	1	Relevan

Valid learning module was achieved because there is conformity between its components and the indicator of validity instruments. The validity instruments were revised to meet experts' standard before being tested in the validity test. Content validity of the developed module showed that the module has met the content standard based on the theory underlying the research. This finding is in line with research done by Wijaya (2015) who states that module development based on the theories can be categorized as valid [8].

TABLE 4. THE RESULT OF MODULE'S VALIDITY TEST

Inspected aspects	Validity Result	Criteria
Content	4,1	Very valid
Evaluation instruments	4,4	Very valid
Average Score	4,25	Very valid

Construct validity of the developed module can be viewed from the link among materials in the developed learning module. Each material includes characteristic to stimulate critical thinking skill. These factors determine the quality of the learning module, so it can be implemented in the real teaching and learning process.

Moreover, the practicality of the developed module can be viewed from several indicators, namely; (1) feasibility of the module; (2) teachers' attitude toward the learning module; and (3) students' attitude toward the learning module. The result of practicality test of the developed module can be seen in the Table 5.

TABLE 5. RESULT OF MODULE'S PRACTICALITY

	Score	Category
Feasibility	4,25	Very Practical
Teachers' Attitude	4,30	Very Practical
Students' Attitude	4,12	Practical

The practicality test result showed that the developed learning module's orientation on the case-based learning was in practical category. The feasibility score of the developed learning module was 4.25 which was categorized as practical. While the teachers' attitude on its feasibility was 4.30, and the students' attitude toward the used of the developed module was scored 4.12, both scores were categorized as practical.

These good results were attained because of some reasons. For example, the module was completed with the practical guide, sufficient materials, as well as the appropriate evaluation instruments to assess students' level of competency. It can be said as improvement since there are very few textbook or students' worksheet that can fulfill students'' need. In the development of the learning module, the researcher tried to complete all the needed sources and materials to meet students' need.

The effectiveness of the developed module can be seen from the improvement of the average score of pre-test and post-test. The result of pre-test and post-test can be seen in the Table 6 and Table 7.

TABLE 6. RESULT OF PRE-TEST FOR STUDENTS' CRITICAL THINKING TEST

Competencies	Average Score	Categories
Giving simple explanation	80,5	Critical
Formulating Questions	82,5	Very Critical
Giving Arguments	79,5	Critical
Analyzing Problems	63,5	Critical
Concluding	72,0	Critical
Evaluating	80,0	Critical
Determining Action	85,5	Very Critical
Total Average	**77,64**	**Citical**

While in the post-test, there were significant improvement on the result of students' score, as can be seen in the Table 7.

TABLE 7. RESULT OF PRE-TEST FOR STUDENTS' CRITICAL THINKING TEST

Competencies	Average Score	Categories
Giving simple explanation	90,5	Very Critical
Formulating Questions	92,5	Very Critical
Giving Arguments	87,5	Very Critical
Analyzing Problems	80,5	Critical
Concluding	81,5	Very Critical
Evaluating	84,75	Very Critical
Determining Action	89,5	Very Critical
Total Average	**86,68**	**Very Critical**

In pre-test, the gained average score was 77,64, while in post-test, it increased into 86.68. Viewing from the minimum passing grade criteria which was 75, the post-test score was categorized as passed. Statistic test by using t-test with correlation sample shows that calculated t-score (-22,57) < t table (-1,868). It shows that the developed learning module is effective in improving students' critical thinking skill, and it means that the hypothesis was accepted. Thereby, the case-based learning oriented module for Biology is effective to improve the critical thinking skill of senior high school students.

Although there was learning improvement on the second meeting of the module implementation, there were still some obstacles detected. First, in formulating questions to be discussed, some groups had not referred the revealed cases. Second, there were still some inactive members within each group; (3) most students were unable to effectively spend their time so they could not perform their best on their report.

Some obstacles found in the second meeting were used as evaluation and reflection by the researcher and the teachers so it can be avoided in the next meeting. The result of evaluation and reflection from the second meeting are as follow. First, teacher should give guidance in formulating problems so it referred to the given issue. Second, teacher should approach the students with low participation and motivate them after the reason of their lack of participation is identified. Third, in every session of teaching activity, teacher should remind the students about the time allocation. If it does not work and the allocated time is still not sufficient to accomplish the task, then teacher should modify the instructions, for example by assigning the task as group assignment where students are assigned different roles within their respective groups.

The result of evaluation and solution of the obstacles faced in the second meeting was implemented in the third meeting with the topic "Human Excretion System (Skin)". Generally, the process of learning in this meeting was better than before. The students were getting used to use the developed learning module, to formulate question based on the given issue, to participate better in the discussion session, and to accomplish the task more effectively and efficiently within the allocated time.

In the fourth and fifth meetings, the learning process appeared to be more interesting because in these meetings, students were given opportunity to explore their knowledge to identify various kind of diseases related to excretion (skin). There were also videos played as teaching aid to give visual examples of serious diseases related to excretion (skin). In the fifth meeting, the students were able to memorize the material to be presented and to comment critically and confidently on the given cases and confidently expressed it in front of their friends. The teaching atmosphere also tended to be more conducive since teacher was no longer the center of teaching learning process. There was positive interaction between

teacher and students, as well as among students. Teacher's role as facilitator could be clearly seen as the teacher listened to and observed the students who were actively referring to the issue and material with their friends. Teacher's role was mainly to confirm on the students' understanding.

In the sixth meeting, the researcher conducted a valid and reliable critical thinking test. It was found out that there was significant progress on the use of the developed learning module reflected on the improvement of average score given by the observer from the first meeting until the last. In the first meeting, the average score was 3,7, categorized as practical. The average score was improved in the second meeting into 4,0, while it was 4,1 in the third meeting, and 4,4 in the fourth meeting in a very practical category.

The effectiveness of the developed learning module can be seen from the gap between students' score of critical thinking tests conducted in the beginning and end of the module implementation. The average score of the critical thinking test resulted in the end of the meeting was 86,68, categorized as passed because it was higher than the school passing grade which was 75. This result shows that there was significant improvement on the students' level of critical thinking since the previous score of the same test was only 77,64. This finding was strengthened by the result of t-test, with t-score (22,567) > t table (1,868). From these findings, it can be concluded that there was significant improvement on students' critical thinking before and after the use of the developed learning module.

The finding of this study was relevant with the findings of the study done by Susandari (2012). Susandari (2012) in her study about the influence of case-based on the students' understanding toward concept and education theories in Universitas Islam Bandung, found that the students could comprehend psychological concept and theory based on case better than using other learning method like presentation and discussion [9]. It is related to the characteristics of case-based learning method that presenting such as well-structures case to construct a more guided discussion session.

In addition, all critical thinking skill spectrum was generally revealed within the process of learning through the use of the developed module. However, the test result shows that the module mostly encouraged students to train their skills on formulating problems, giving argument, and drawing conclusion. More specifically, students' skill in giving argument was stimulated when they were given cases to investigate. While students' skill on formulating problems was fostered to explore questions to be answered through experiment. In the model of case-based learning, both of those skills appeared in the phase of retrieving. Furthermore, skill for drawing conclusion was trained during the phase of retaining, in which the students were asked to conclude and comprehend the result of solving problem as well as relate it to the learning material.

The effectiveness of developed learning module, in improving students' critical thinking was caused by some factors such as the use of health cases that should be criticized by the students. Moreover, the developed module had been adjusted to the 2013 curriculum used in SMA Negeri 1 Tabanan with scientific approach as the characteristics of the curriculum. It was in line with the case-based learning syntax which contained learning procedures with scientific approach. Moreover, students were given opportunity to test the impact of certain problems to make them always seek clarification on every issue they find in their real life. Through that way, students are expected to analyze things from different point of views before making judgment.

Moreover, the implication of this study dealt with: (1) the developed module will be effective is the teacher understand the implementation of case-based learning; (2) teachers should have holistic knowledge on the material so they could give confirmation on students' understanding; (3) teachers should have be able to explore updated issues and use it as topic of discussion; (4) learning facilities are important to provoke the learning process.

IV. CONCLUSION

From the findings and discussion of the study, it can be concluded that: (1) the validity test on the development of case-based learning oriented Biology learning module was categorized as valid with average score 4,3; (2) the case-based learning oriented Biology learning module was categorized as practical with the average score of feasibility from six meetings was 4,25, average score for teacher's attitude toward the developed module was 4,3 (very practical), and the average score for students' attitude toward the developed module was 4,12 (practical); (3) the case-based learning oriented Biology learning module was effective to improve students' critical thinking, it was showed by the average score of students' test result which was 86.68 and exceeded the passing grade and the t-test result with p value < 0,05.

In accordance with the weaknesses of the development of this learning module due to the limitation on time to do the study, the next study on developing case-based learning Biology module is suggested to improve the substance as well as the design and use it as reference to do an experimental research.

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New Concept of Learning Outcomes Assessment in Adaptive Mobile Learning

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***Abstract*— Although technology can positively affect learning process, learning technology like Adaptive Mobile Learning (ALM) for assessment still poses two main problems in terms of its tests session value and the possibility of the test being taken repeatedly by learners. This study proposes the use of Simple Additive weighting method (SAW) to improve AML systems by using tree criteria, such as: test session, learning session number and learning intensity. These criteria to enable the learning process according to their level of competence. A model of AML system is then drafted by applying the SAW Method with the infusion of the tree criteria based on Bloom's Taxonomy. It is strongly recommended that a research in near future 1) should be conducted to develop AML system using SAW method for optimizing the learning assessment on AML system and 2) can add an assessment rubric based on Blooms Taxonomy Model.**

Keywords*— *Adaptive Learning; Mobile Learning; Assessment; Simple Additive Weighting; Cognitive; Affectiv; Learning Outcomese.

I. INTRODUCTION

Conventionally, the learning process is done face to face between teachers with learners in the classroom. Teachers have a very important role in determining the quantity and quality of the implementation study. Therefore, teachers must think and plan carefully to improve learning opportunities for learners and improve the quality of teaching. Today, technology has become a critical requirement in the learning process, both as a medium of learning or learning resource. It is marked with a number of functions on a mobile device. This became the beginning of the evolution of mobile devices, in this case is characterized by the emergence of smart phone technology. Smartphone technology is a new class of mobile device that can facilitate access and data processing computing power [1]. The rapidly increasing development of mobile technology and communication enables the learning process to be conducted beyond the classrooms during school hours. With mobile technology and communication, teaching and learning process can be conducted anywhere and anytime.

In the learning process, each learner has different cognitive abilities Dzaki [2]. This problem can be overcome by using adaptive learning system. [3,4,5,6,7]. According the research conducted by Wirawan and Santo [5] the use of Adaptive Mobile Learning (AML) in Information Systems courses can be prepared in accordance with the ability of students with a pre-test and test session. AML can be used as an alternative media (supplement) in information systems courses. Student responses on the use of AML for information systems are very positive, where 67.7% are in very positive and 32.3% are on the positive.

However, AML has two disadvantages. First of all, the assessment process uses only the test session value, while according to Bloom's taxonomy, the assessment of learning outcomes should include three aspects, namely a) Cognitive, b) Psychomotor, c) Affective. Secondly, each learner can perform repeatedly a test session, so that the students who get a score of 90 for several times the test session is considered equal to learners who obtain a score of 90 for just one test session. This will not reflect students' learning outcome fairly for students taking the session once compared to those who take it several times.

These assessment issues can be handled using Simple Additive weighting method (SAW). These problems can be handled using Simple Additive weighting method (SAW) [8,9,10]. SAW is a method of artificial intelligence that can be used in the decision-making process based on the determination of the weight values for each attribute and continued with the process of assessment the best alternative selecting from a number of the best alternative [11]. The present study will develop an ALM model with SAW to accommodate the infusion of Bloom's Taxonomy to improve the effectiveness of ALM for assessing learner's learning outcomes.

II. LITERATURE REVIEW

The present section will present a review of the literature that deals with the educational aspects that become concerns this research.

A. Multi-Attribute Decision Making (MADM)

MADM refers to screening, prioritizing, ranking, or selecting a set of alternatives usually under independent, incommensurate or conflicting attributes [11]. A MADM problem can be concisely expressed in the matrix format as shown below:

$$A = \{a_i | \; i = 1,2,3,\ldots\ldots, n\} \quad (1)$$

$$C = \{c_i | j = 1,2,3,\ldots\ldots, m\} \quad (2)$$

$$W = \{w_1, w_2, w_3\ldots\ldots, w_n\} \quad (3)$$

$$X = \begin{bmatrix} x_{11} & x_{m1} \cdots & x_{1n} \\ \vdots & \ddots & \vdots \\ x_{m1} & x_{m2} \cdots & x_{mn} \end{bmatrix} \quad (4)$$

Where A_1, A_2 ,...,A_n are feasible alternatives, C_1, C_2,...,C_n are attributes (criteria), x_{ij} is the performance rating of i-th alternative with respect to j attribute, and w_j is a weight (significance) of j attribute.

In a typical MADM evaluation, attributes can be classified into two main categories: cost attributes and benefit attributes. In the case of benefit attributes, the higher score is assigned to the alternative which performance rating is higher, i.e., preferable is a maximum of j attribute. In contrast to the previous, in the case of cost attributes, higher score is assigned to the alternative which performance rating is lower, i.e., the minimum of j attribute is preferable.

There are three approaches to find the value of weight an attribute, namely subjective approach, objective approach and integration approach. Each approach has advantages and disadvantages. On the subjective approach, weighting value is determined based on decision makers, so some of the factors in the process of rank alternative can be determined freely. On the objective approach, value of weight calculated mathematically, so ignore subjective from the decision makers.

B. Simple Additive Weighting Method (SAW)

The basic concept of SAW method is to find the sum of the weighted performance rating for each alternative on all attributes [11]. SAW method requires a process of normalizing the decision matrix (X) to a scale that can be magnified compared with all the ratings of existing alternatives.

$$r_{ij} = \begin{cases} \frac{X_{ij}}{Max_{ij}} & \text{If } X_{ij} \text{ is an attribute cost} \\ \frac{Min_{ij}}{X_{ij}} & \text{If } X_{ij} \text{ is an attribute benefit} \end{cases} \quad (5)$$

Where $r_{ij}$is the normalized performance rating of alternative A_i on attributes C_j; i = 1,2, ..., m and j = 1,2, ..., n. Preference value for each alternative (V_i) is given as:

$$V_i = \sum_{j=1}^{n} w_j \, r_{ij} \quad (6)$$

V_i Larger value indicates that the A_i alternative is selected.
SAW method also known as scoring method is one of the best and simplest types of multiple attribute decision-making method. The basic logic of the SAW method is to obtain a weighted sum of performance ratings of each alternative over all attributes. The stepwise procedure is given below:

$$A = (a_1, a_2, \ldots\ldots, a_n)$$

Let $A = (a_1, a_2, a_3, ..., a_n)$ be a set on alternatives.

$$C = (c_1, c_2, \ldots\ldots, c_n)$$

Let $C = (c_1, c_2, c_3, ..., cn)$ be a set of criteria.

1. Step 1: Construct the decision matrix:

$$\begin{matrix} d_{11} & d_{12} & d_{1n} \\ d_{21} & d_{22} & d_{2n} \\ \ldots & \ldots & \ldots \\ d_{n1} & d_{n2} & d_{nn} \end{matrix}$$

   Where d_{ij} is the rating of alternative A_i with respect to criterion C_i.
2. Step 2: Construct the normalized decision matrix. For beneficial attribute (criteria of benefit):

$$r_{ij} = \frac{X_{ij}}{Max_{ij}}$$

   For non-beneficial attribute (criteria of cost):

$$r_{ij} = \frac{Min_{ij}}{X_{ij}}$$

3. Step 3: Construct weigthed normalized decision matrix

$$V_{ij} = W_{ij} * r_{ij}, \sum_{i=1}^{n} W_i = 1 \quad . \quad (7)$$

4. Step 4: Calculate the score of each alternative.

$$S_i = \sum_{i=1}^{n} V_{ij}, i = 1, 2, 3, \ldots., n \quad . \quad (8)$$

5. Step 5: Select the best alternative.

$$BA_{SAW} = \max_{i=1}^{n} S_i \quad (9)$$

Where *BA saw* is Best Alternative in Simple Additive Weighting (SAW) method and S_i is matrix score.

C. Adaptive Mobile Learning

The functional design of the AML learning in previous research that will be studied in this research can be shown clearly in Figure 1.

There are four stages on the learning process of AML: (1) Perform a pre-test to learners prior to learning chapter (courses), students will receive pre-test with the following provisions. (2) Questions were taken representing each chapter. (3) Teachers determine the questions selected for the pre-test. (4) The results passed or not are determined by the percentage of the number of chapters of the correct answers to the questions in each chapter, where the teacher determines the percentage of pass for each chapter.

The purpose of the pre-test is to determine the ability of early learners. After the pre-test, the system will give a chapter that can be accessed in accordance with the level of understanding of learners. Some possible after pre-tests can be conducted: (1) No chapters pass. If all the chapters are not

passed, students can only access the lowest chapter that has not been passed. (2) Some or all chapters pass. If there are several chapters that pass, then pass only chapter that can be accessed. If all chapters pass then all the chapters can be accessed.

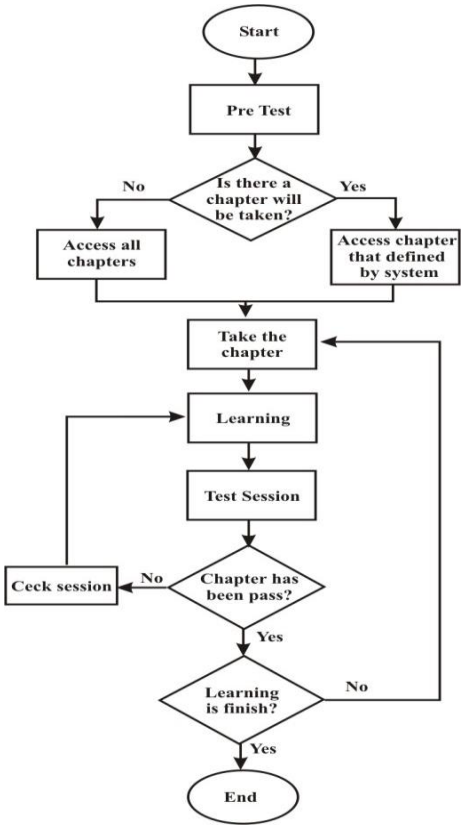

Fig. 1 Flow chart *Adaptive Mobile Learning* [5,7]

For taking a chapter, there are two conditions in taking the matter: (1) The conditions in which the students are free to choose the material. (2) The conditions in which learners must take the matter determined by the system. This happens because there is a chapter that did not pass the pre-test.

After the learning process, students were asked by system to take a test session. All provisions for the provisions of the test session are as follows: (1) Questions are taken from the test session is a chapter that has been taken. (2) Standard passing score is determined set by lecturer. (3) If students do not take the test session, students cannot continue the learning process. (4) The results obtained later by learners are pass or not pass in each chapter.

There are several possibilities in this test session: (1) If students do not pass the test session, students will repeat the learning process for the chapters that did not pass. Repetition of the learning process will be stored by the system as a learning session. (2) If students pass the test session, students can continue to the next chapter to the learning process end. If all the chapters have been completed, students can complete the learning process. In the test session, the value obtained by learners is only used to determine graduation. The learning process for each chapter is based on the minimum standards set by lecturer. However, every learner can perform repeatedly a test session, so that the students who get a score of 90 for several times the test session is considered equal to learners who obtain a score of 90 for just one test session. The pretest user interface developed in AML is shown in Figure 4. Interface pretest is used to measure the initial capabilities of learners. There are several provisions in the pre-test processes such as. (1) The questions are presented is the early material of each chapter. (2) The teacher can determine the number or type of questions selected for the pre-test. (3) The results passed or not are determined by the percentage of the number of chapters of the correct answers to the questions in each chapter, where the teacher determines the percentage of pass for each chapter.

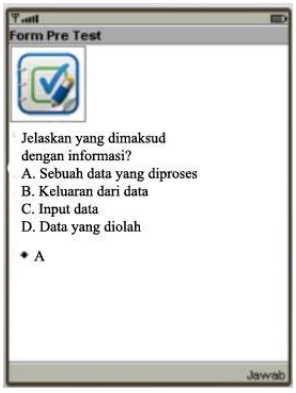

Fig. 2 Pretest form

Fig. 3 Chapter form

Figure 2 is used to display the chapter material that passes from the pretest (Figure 3). There are two conditions in the learning process. (1) The learner can access the chapter that has passed freely. (2) Learners can access the chapter that does not pass (pre-test) in accordance with the directives of the system. Figure 4 is used to display the chapter material that not passes from the pretest. If chapter materials are passes, students can freely access the material. While the chapter material that has not yet passed, access to the materials will be determined by the system according to the level of the chapter material. After all the learning process is done by learners, then the next process is test session in Figure 5.

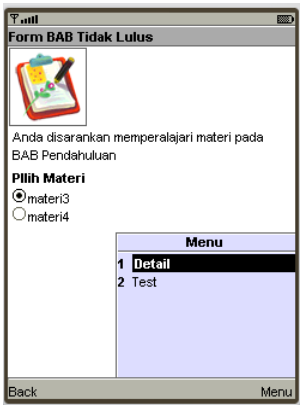

Fig. 4 Content form

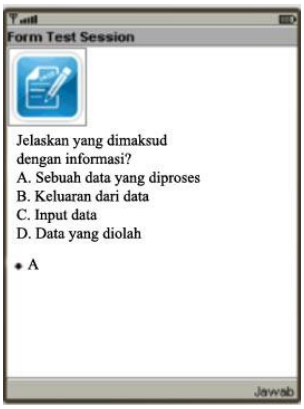

Fig. 5 Test session form

D. Blooms Taxonomy Model

In 1950 Benjamin Bloom developed a learning taxonomy, which was then known as a Bloom's taxonomy. Taxonomy itself is defined as a classification device of learner's cognitive process, which is involved in learning objective [12, 13, 14]. Bloom classified learning process into three-psychology domain i.e.: cognitive, affective, and psychomotor. Cognitive aspect is oriented thinking skills that include intellectual ability that is simpler, which remember, to the ability to solve problems that require students to join the new and incorporating some ideas, ideas, methods or procedures studied to solve the problem. Cognitive skill of learners in learning process divides into six different categories namely: knowledge (C1), comprehension (C2), application (C3), analysis (C4), synthesis (C5), and evaluation (C6). Each category is stated using noun word (Fig. 6).

Fig. 6 Blooms Taxonomy Model

Affective domain is associated with the realm of attitudes and values. Affective includes character behaviors such as feelings, interests, attitudes, emotions, and values. Some experts say that a person's attitude can be foreseen amendments when someone has high-level cognitive powers. The characteristics of affective learning outcomes will look at learners in a variety of behaviors.

Psychomotor is the domain-related skills (skills) tau's ability to act after someone receives a specific learning experience. Psychomotor learning outcomes are actually a continuation of the cognitive learning (understanding something) and affective learning outcomes (the new look in the form of tendencies to behave). Results of learning skills (psychomotor) can be measured by: (1) direct observation and assessment of the behavior of learners during practice learning takes place, (2) after the following study, by way of giving tests to students to measure knowledge, skills, and attitudes, (3) sometime after the study was completed and later in the work environment. [15, 16, 17]. There are five important traits that can be used for student affective assessment, namely attitude, interest, self-concept, value, and moral [18].

III. New Concept For The Assessment Process Using Additive Weighting On Adaptive Mobile Learning

A. New Concept using SAW Method in AML

In this study, only two of the three taxonomy blooms used, including: cognitive and affective.

1. The cognitive aspects of the learners will be measured through the criteria of the results of the test session and the learning session number.
2. The affective aspect of learners will be measured through the learning intensity.

Based on AML, learning process is conducted in several additional phases ranking process by using SAW method. Following the addition of the steps proposed in this paper looks at the blue rectangular blocks.

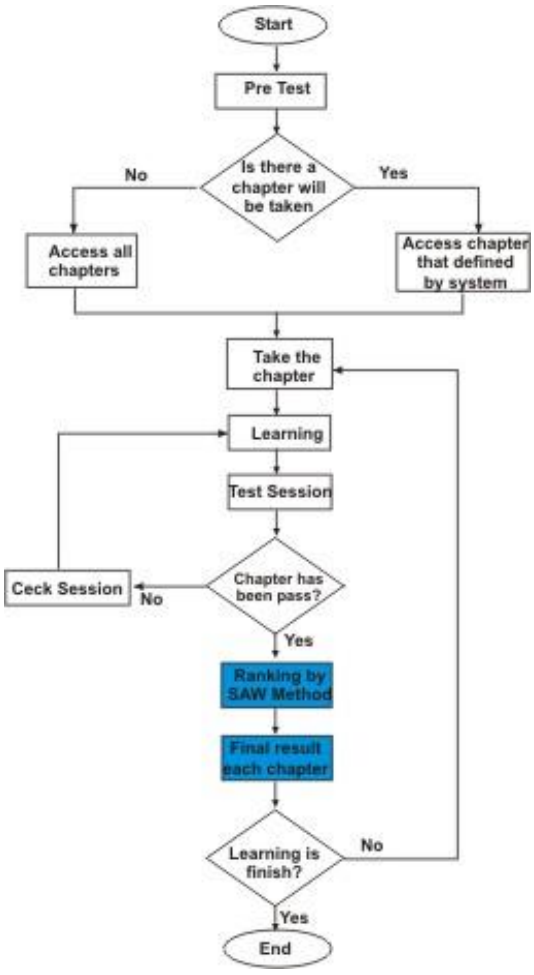

Fig. 7 Modification *AML with SAW Method*.

B. Calculation of Assessment using SAW Method

The SAW method is used to determine the final value of the learner's test and then perform a rating based on the value of the SAW method. The criteria used in determining the rankings are: 1) the value of the test session (benefit criteria), 2) the learning session (cost criteria) and 3) Learning intensity (cost). The value of the test session is obtained from the test of the learner after the learning of each chapter is completed. The standards of these criteria can be tailored from each chapter. The value of the learning session criteria is obtained from learners who repeat the test session. This is because the value of the test session obtained does not meet the standards set by each chapter. The lower of the learning session, then the faster of the learner's level to understand the chapter of the material. However, if the high value of the learning session is low, then the learner will take longer to understand the chapter material. Learning intensity value is derived from the amount of time that the learner uses in learning the material each chapter. The less time spent, the higher the motivation to learn the learners. Vice versa, the lower the motivation to learn learners. Here is an example of the data used in the calculation method in SAW (Simple Additive Weighting). Here are the steps of SAW calculation method:

1. Problem formulation
   Suppose there are 10 learners who have test session values, learning session and learning intensity. The following sample data is used.

Table .1 Test scores data of learners

No	Student	Test Session	*Learning Session*	*Learning Intensity*
1.	Student 1	80	2	10 minutes
2.	Student 2	78	1	15 minutes
3.	Student 3	98	1	20 minutes
4.	Student 4	84	3	35 minutes
5.	Student 5	79	2	45 minutes
6.	Student 6	99	3	50 minutes
7.	Student 7	97	1	25 minutes
8.	Student 8	76	2	40 minutes
9.	Student 9	75	3	30 minutes
10.	Student 10	88	2	10 minutes

2. Determining the weight value preferences
   In granting the weights, lecturers of the course can decide for themselves the value of the weight of each criterion. In this example, use the weight 1 for the learning session, the test session is 10 and the learning intensity is 1.
3. Determining the maximum value for limit alternative.
   At this stage, the determination of the limit values (maximum or minimum) of the test session value, learning session and learning intensity. Value of 100 for the test session, 1 for the learning session and minimum values from all learning intensity of learners.
4. Make a decision matrix (X) formed from the rating table matches on each criterion.

Table.2 Alternative format

Code	Test Session (Max)	Learning Session (Min)	*Learning Intensity* (Min)
A1	80	2	10
A2	78	1	15
A3	98	1	20
A4	84	3	35
A5	79	2	45
A6	99	3	50
A7	97	1	25
A8	76	2	40
A9	75	3	30
A10	88	2	10
Max	**100**	**1**	**10**

5. Make a decision matrix (X) and Normalizing the decision matrix with alternative normalization Ai on performance Cj.
6. The final result of the preference value (Vi) obtained from the sum of the rows of the matrix multiplication result element normalized (R) with a weight of preferences (W).
   1. V1 = (0,800)(10)+(0,500)(1)+ (1,00)(1) = 9,50
   2. V2 = (0,780)(10)+(1,000)(1)+ (0.67)(1) = 9,47
   3. V3 = (0,980)(10)+(1,000)(1)+(0.5)(1) = 11,30
   4. V4 = (0,840)(10)+(0,333)(1)+(0.286)(1)= 9.02
   5. V5 = (0,790)(10)+(0,500)(1)+(0.22)(1) = 8,62
   6. V6 = (0,990)(10)+(0,333)(1)+(0.2)(1)= 10,43
   7. V7 = (0,970)(10)+(1,000)(1)+(0.4)(1) = 11,10
   8. V8 = (0,760)(10)+(0,500)(1)+(0.25)(1) = 8,35
   9. V9 = (0,750)(10)+(0,333)(1)+(0.33)(1) = 8,13
   10. V10 = (0,880)(10)+(0,500)(1)+(1)(1) = 10,30
   11. **Max = (1)(10) +(1)(1) + (1)(1)= 12**
12. The final result of the preference value (Vi) be normalized value by value (Vi) multiplied by 100 and divided by the value of the number of alternative value (Max) then get the results (Vi) which is new.
    1. V1 = (9,50*100)/12 = 79,167
    2. V2 = (9,47*100)/12 = 78,91
    3. V3 = (11,30*100)/12 = 94,167
    4. V4 = (9,02*100)/12 = 75,167
    5. V5 = (8,62*100)/12 = 71,83
    6. V6 = (10,43*100)/12 = 86,9167
    7. V7 = (11,10*100)/12 = 92,5
    8. V8 = (8,35*100)/12 = 69,583
    9. V9 = (8,13*100)/12 = 67,75
    10. V10 = (10,30*100)/11 = 85,83
    11. **Max = (12*100)/12 = 100**
13. The results of the calculation of the value of Vi is then obtained students' final grades.

Table.3 New score using SAW Method

No	Student	Score	New Score (SAW Method)
1.	Student 1	80	79,167
2.	Student 2	78	78,91
3.	Student 3	98	94,167
4.	Student 4	84	75,167
5.	Student 5	79	71,83
6.	Student 6	99	86,9167
7.	Student 7	97	92,5
8.	Student 8	76	69,583
9.	Student 9	75	67,75
10.	Student 10	88	85,83

IV. CONCLUSION AND SUGGESTION

There are two significant results in this study. First, the present study contributes to the concepts in the assessment of learning outcomes in AML Systems using SAW method. The criteria of learning sessions, learning intensity and test sessions value can be used in determining the final grade. Criteria learning sessions are cost criteria that can effect of the final value. The more number of time the students take to repeat the learning sessions will affect the value of the test session. Secondly, the study also has drafted AML Systems using SAW method. Further research can be conducted 1) to improve the proposed AML system development using SAW method for optimizing the learning assessment on AML system. 2) can add an assessment rubric based on Blooms Taxonomy Model.

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A Collaboration Between Linguistics and Genetics: Tracing the Bajo Diaspora History in Eastern Indonesia

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***Abstract*— This paper aims at comparing and discussing recent findings from human genetics (genomics) and linguistics, regarding the long-lasting question of the Sama-Bajau / Bajo diaspora in Eastern Indonesia, Sulu archipelago (South Philippines) and Sabah (Malaysia). The Bajo are a maritime-oriented people, and some of them were sea nomads until the 1970s. They scattered over this wide zone centuries ago, they forgot their territory of origin, and the original Sama-Bajau language locally diversified in a dozen of languages or dialects. If we consider the common patterns of their origin myths, it seems that they were forced to flee their homeland by a foreign power. Genomics shows early admixtures with the Bugis (South Sulawesi) and the dating of their diaspora broadly matches with the linguistic data. The unidentified political event that drove them out their homeland probably happened at the end of the 11th century. If genetics and linguistics data correspond, these data are strongly backed. However, we came upon a serious discrepancy about the location of the Sama-Bajau homeland: geneticists assert it was South Sulawesi, while linguists believe it was South Kalimantan, because SB languages are related to South Barito cluster more than to any other language in Southeast Asia.**

Keywords*— *Sama-Bajau; Bajo; Sama-Bajau language; sea nomads; maritime diaspora; Bugis; Sulu Archipelago

I. INTRODUCTION

The Bajo (Sama-Bajau) people are nowadays dispersed in dozens of villages on the coast of eastern Indonesia, southern Philippines (Sulu archipelago) and Sabah (Malaysia). In Indonesia, they call themselves 'Sama' [samə] or use the exonym 'Bajo', which is not considered offensive (as it may be in the Philippines). The Sama-Bajau language family, which includes a dozen of languages, clearly shows that the communities, scattered thousands of nautical miles away from each other, all came from one and only place of origin. However, the memory of the Sama-Bajau's homeland has been totally forgotten because their migrations began well before the colonial period and took place in stages. To my knowledge, the Bajo are not mentioned in any old Javanese or Malay text and the first known reference to this ethnic group is a brief jotting written by the Portuguese merchant Tomé Pirès [1] in Malacca around 1515.

The question of their origin intrigues and fascinates the Sama-Bajau themselves: unlike other peoples oriented towards maritime activities, and great seamen like the Bugis, the Sama-Bajau cannot refer to any territory of origin, not even to a city or a symbolic monument. Since their ongoing diaspora did not leave any archaeological evidence, only linguistics and genetics can contribute to tracing this migration, back to their homeland. The Sama-Bajau oral tradition evokes various territories of origin, notably in Peninsular Malaysia, but in the absence of historical data, is there any scientific argument to support these traditional origin accounts ?

This paper aims at comparing recent findings from human genetics (genomics) and linguistics, two science fields which collaborate more and more. Focusing on Sama-Bajau people, I will deal with genomics data (resulting from a joint research with geneticists from the University of Toulouse and Eijkman Institute in Jakarta) and linguistic data from various scholars, including my field work in many Bajo villages in Eastern Indonesia. The main issue of this paper is to find out if through a transdisciplinary approach (genomics and linguistics) we can understand the stages of this migration and point to the Sama-Bajau territory of origin.

The first section reviews the Bajo oral traditions about their origin. There are some common features in almost all of their myths of origin, but they point to different places, depending on which Bajo community we consider.

The second section examines and summarizes genomic findings, quoting Kusuma *et al.* (2017) [2]. They exclude various possibilities regarding the original location of the Bajo ethnic group, so that we can now "zoom" on a particular region of Insular Southeast Asia.

The third section deals with the linguistic data, arguing that the Indonesian Bajo did not migrate southwards from South Philippines (as is assumed in the existent literature). Indeed, from the starting point of their dispersion, the Sama-Bajau exiles found refuge in two distinct zones

Lastly, we will examine if the findings from genomics and linguistics do match or not, and whether this transdisciplinary approach can provide a convincing clue about the very first Sama-Bajau homeland.

II. SAMA-BAJAU ORAL TRADITIONS ABOUT THE ORIGIN OF THEIR ETHNIC GROUP

A. The Lost Princess : a set of origin myths

A famous Sama-Bajau origin myth, on which I put the generic label "the lost Princess", is commonly mentioned by scholars who have studied the Sama-Bajau people, whatever their scientific field. However, before sketching this myth, two features must be underlined. Firstly, there are many different versions of this myth; while the main character is always a lady who travels by sea, she is not necessarily identified as a princess, and she is not always lost. Secondly, this myth or set of myth variants is often presented as a common denominator among all the Sama-Bajau communities over their present diaspora zone. I think this is a bias, because a huge part of the ethnographic surveys have been completed in South Philippines, esp. the Sulu (before the current violent unrest), to a lesser extent in Sabah (Malaysia), but very few in Indonesia (see for instance Lapian [3], Zacot [4], Nagatsu [5], Stacey [6] and Nuraini [7]). The "lost Princess" myth is by no means universal within the Sama-Bajau communities.

This myth includes a 'main stream' variant, in which the Princess is the daughter of Johor Sultan. This account claims that the Bajo people were driven out of Johor (now a state of peninsular Malaysia) either because they had failed to prevent an attack on a ship carrying their princess, or because they had themselves carried out the attack, or alternately because they had failed to find the princess after being sent to search for her. Sather [8] quotes a version recorded on the east coast of Kalimantan (Borneo) in 1849 : "The Bajau came originally from Johor. Once a Johor princess disappeared during a storm at sea. The Sultan of Johor organized a group of people to search for her. However, the lost princess could not be found, and the people who were looking for her found themselves far away from Johor and were unable to find their way back again, and so they settled down along the coastal areas of Borneo, Sulawesi and in the Sulu Archipelago". In another version, the Bajo sailors had not lost their way but never returned to Johore for fear of being punished for having failed. Liebner [9, 10] gives a precise account of some "Princess adrift: Bajau origin stories" variants. Of course, none of these stories mention any date or any identifiable historical event that we could refer to.

Amazingly, because this myth is mentioned again and again in diverse reports, paper, books about the Sama-Bajau, it has almost acquired a force of law. For instance, today most inhabitants of the Malaysian province of Sabah in North Borneo are convinced that the Sama-Bajau did indeed originate in the Sultanate of Johor. The fact is that authors of school textbooks appear to have relied on the authority of some respected scholars to confirm this geographical origin. Nagatsu [5] quotes a high school textbook of Malaysian history published in 1981, which states that the Bajau "are Muslims and immigrant nations to Sabah. They came from Johor during the Sultanate of Brunei era. They are regarded as bumiputera just as the Brunei Malay are. [...] The Brunei and the Bajau people seem to be a similar kind of the Peninsular Malay people." This account of the Sabah Sama-Bajau origins conveniently confers legitimacy upon the claim that the Bajau are part of the Malaysian nation, for the State of Johor is in peninsular Malaysia, relatively close to the capital of this country, see [7].

However, the Johor origin hypothesis is not convincing for several reasons. Not a single Bajo community is to be found in peninsular Malaysia today. The only thing the "sea peoples" (Orang laut) of Riau province, offshore from Sumatra, have in common with the Sama-Bajau is a similar way of life but their languages are not related [11]. The SB languages have lexical similarities with Malay, but these are either cognates (from Proto-Malayo-Polynesian) or loanwords from Malay (or nowadays from Indonesian/Malaysian). If the Bajos had originally come from Johor, why is there not even the smallest group of them left there? Why is there not a single Bajo village in western Indonesia, while they settled so successfully in many spots over the eastern part of this wide archipelago? Furthermore there is no trace in the history of Johor of any coastal dwelling people having been expelled or banished. As a matter of fact, the Johor Sultanate was founded after the conquest of Malacca by the Portuguese in 1511. More than four centuries before, the Bajo had moved from their mysterious homeland, and they were probably already scattered all along the Makassar Strait and the Sulu archipelago when Johor Sultanate arose. The beautiful myth of the "Bajo Princess from Johor" is historically impossible.

Moreover, the "out of Johor" claim was unheard of by my Bajo informants in the southern part of Indonesia, around Makassar Strait and Flores Sea (except to those who have read Lapian's book). Some of them in Eastern Lesser Sunda Islands actually have a narrative of their origins that is relatively similar to the story of the Johor princess: in olden times some Bajos were wandering in search of a lost sister, whom they could not find because she was hiding in the bamboos of their boat; they never returned for fear of punishment. But no particular place of origin is brought up.

Another variant, in Southeast Sulawesi and other villages around Flores Sea, says that a drifting bamboo went close to a boat, although the seamen had repelled it twice; at the third time, they decided to take it on board. Later, a beautiful lady came out of this bamboo. Other versions just tell that she travelled in a small *perahu* and landed alone on a shore. Then the king (seemingly Bugis or Goa) felt in love with her, and married her, although she did not utter a single word. Months later, the king heard her singing to her baby in Bajo language, thus uncovered her origin; this legend does not make clear why this Bajo women had to flee, and why she wanted to hide her identity.

Other origin myths do not mention any lost princess. In Sulu, a myth noted by Nimmo [12] explains that the Bajo used to live somewhere near Peninsular Malaysia. One evening, they tied their boats to a big black pillar in the middle of the sea. But it was the tail of a giant skate fish, which at night started to swim and towed all the boats very far, far away, eastwards, until the Sulu archipelago, where the Bajo eventually settled. In Southeast Sulawesi, the story is totally different: a huge tree was cut and felt by a hero to make a big *perahu* (dugout pirogue); the tree had thousands of bird nests on its branches, and when it fell, all the eggs broke, and the

egg yolks formed a big wave, a kind of tsunami which dispersed the Bajo seamen all over the Flores sea. This is obviously an elaboration on an episode of the Bugis literary masterpiece *I La Galigo*: the hero Sawérigading fells down the holy tree Wulenreng (or Wélenréng), but nothing is written about an egg yolk wave and a subsequent Bajo dispersion at sea.

It makes sense that the Bajo, anxious to know and to tell where is their homeland, and maybe frustrated for being considered as people "from nowhere", borrowed some myths or particular elements from their closest neighbours mythology. This is also the case of the "princess breaking out of a drifting bamboo" variant, recalling the myth of "the princess born from a bamboo", famous in Kutai-Paser area (East Kalimantan).

Beyond the irreconcilable diversity of these myths, reference to local powerful states is an essential feature. Obviously, the unknown event that triggered the Sama-Bajau diaspora also destroyed most of their political system. Without a centralized power, without an army, they had not choice but to befriend the powerful rulers around them, and provide commodities and services in exchange for staying permit (on the shores) and security… As noted by Hoogervorst [13] (p. 252) : « […] several Sama-Bajau groups claim descent from the Malay kingdom Johor in the Strait of Malacca. Such claims must be contextualised in a setting of semi-mythological lineages from and patron-client relations with ruling dynasties […] ». Another variant quoted by Liebner [10] recounts that the Brunei dynasty had a Bajo male ancestor. The same principle applies to the Indonesian Bajo people around South Sulawesi: there was no point in claimig legitimacy from a state as far as Johor or Brunei. The powerful kingdoms of Goa and/or Bugis became their patrons and protectors. According to the "Princess from a bamboo" myth summarized above (and regarded literally as history), the king married a mysterious Bajo lady, therefore the local Goa or Bugis dynasty has Bajo blood in its veins, thus the Bajos should not be considered as strangers.

B. 'Push' or 'pull' migration factor?

The cause of every documented human migration may be sketched using the 'push & pull' factors, known as Lee's laws, see Lee [14]. A migration may be triggered by a natural disaster (flood, drought, volcano eruption…) or other 'push factors' (bad crops, hunger, war, low social status…) while 'pull factors' include the quest for economic opportunities, safety, freedom, etc. in the new location where migrants settle.

Considering the motivation of migrants, there is usually a mix of 'push' and 'pull' factors, for instance moving from rural to urban areas within the same country, or since a few years migrating from Middle East and Africa to Europe. For young rural Indonesians moving from Central Java to Jakarta or to Kalimantan for instance, the 'pull' factor is dominant (jobs, better income, wider opportunities). The migration is indeed often temporary, until retirement. On the other hand, considering Middle East or African migrants (mostly young men who take excessive risks in crossing Mediterranean Sea to reach Europe, where they will endure a miserable life) the 'push' factor is decisive: fleeing war in Middle East, or in Western Africa escaping family bullying and low expectations of getting a social status and finding a spouse, especially if polygamy is prevalent. Surprisingly, poverty is not the main factor, as disclosed by a recent survey; many male teenagers migrants left their families in Western Africa without previous notice.

Coming back to the Sama-Bajau fate, nobody knows when their migration started, if this migration was progressive or at once, why it happened, and of course where they lived before this dramatic event. The only things we can assert is that it happened, because today's linguistic and cultural data show that in olden times they had one and only homeland.

Of course, no historical documents, no archaeological clues are available to help us answering this question. Oral tradition is by nature doubtful, but if we consider the Sama-Bajau origin myths as a whole, regardless of the variations in the scenarios and characters, it appears that the cause of their migration is always described as a 'push' factor. The common feature is that they fled their homeland, not that they ventured overseas seeking new resources. None of the myths mentions any attractive commodity they may have coveted across the seas. Moreover, the cause which 'pushed' them away seems linked to a political power, forcing their ancestors to flee by sea. This powerful and threatening entity may be concealed under metaphors, like a giant skate fish towing the boats, or the egg yolk wave scattering them offshore. On the other hand, the central female character (Bajo princess and/or wife of a local ruler) represents the weaken Bajo people who search for alliance, protection, and depend on patron-clients good relations (this was clearly the case between Bajo and Bugis sea traders).

It is impossible to speculate furthermore about the cause of the initial Sama-Bajau migration; however, none of the myths evokes a return to the homeland, or any remaining links (through family or trade ties) with their homeland. Surprisingly, no nostalgia about this place of origin is reflected in these myths, the exact opposite of Promised Land memory in another displaced population, the Jews. The Bajo homeland has no name, and cannot even be linked to any of the wide islands of Southeast Asia. This sharp break leads to believe that the initial Bajo migration happened rather fast, not step by step. And probably not as peacefully as proposed by Blust [15]. Moreover, in the Bajo oral tradition, or in informal discussions with Bajo elders, I never noticed any collective hope of coming "back home", or any nostalgia for a supposed "golden age" in their forgotten homeland. Is this because of a considerable distance in time, or because they never had any hope of recovering their land, or in order to alleviate the collective trauma of being banished? We will probably never know.

Nothing is said about Bajo people who, for some reason, did not leave their homeland. The myths assume all the Bajos went at sea, and nobody stayed in the homeland. We should not suppose that only the Bajo men are sailors; those who were nomads used to sail in whole families, and according to many testimonies, until the 20th century, Bajo women were perfectly able to steer a boat. Today no Bajo community

claims they are still living at their original location. If some Sama-Bajau stayed behind, they have also forgotten this dramatic event, and are probably absorbed by other ethnic groups, like is now the case of the former Bajo villages in South Sulawesi (around Makassar), totally merged in the Bugis community, even if some elders still understand Bajo language.

In the literature on Sama-Bajau languages (SB), focusing on the Sulu archipelago, it is assumed that the Sama-Bajau settled there at the first stage of their migration, then centuries later sailed southwards to settle around Sulawesi and other places. It seems odd: if a group of person flee an immediate danger, why should they seek refuge altogether in one and only location (Sulu), rather than scatter here and there? We will return to this issue in part 3.

In sum, if we consider the common features of Sama-Bajau origin myths, it appears that their initial migration was caused by a powerful foreign entity, forcing them away by sea and may be violent means. The Sama-Bajau did not look for economic resources overseas, they had to flee their still unidentified homeland, and this event was sudden and abrupt. The myths implicitely recount that no one remained in the country, whereas no hope of return is evoked.

III. Recent genomic data about the Indonesian Bajo people

Since a few years, I collaborate with a team of geneticists, including researchers from Toulouse University (France) and Eijkman Institute (Indonesia). In the scope of this stimulating cooperation, their aim was to find out if there were specific genetic markers within the Indonesian Bajo community members, then to search for the same markers in other ethnic groups in Southeast Asia. Meanwhile, ideally, I would have found consistent linguistic data. If a particular ethnic group shares with the Bajo some genomic features, and specific language features as well, then we could argue that they had the same ancestors. The ethnic group never involved in maritime migration would then been considered as the descendants of "those who remained behind" when the initial Sama-Bajau migration happened. Or maybe their "cousins", who were close (geographically, genetically and culturally) to the Sama-Bajau before they had to leave.

A perfect coherence between genomics and linguistics findings would be a ideal outline, but three main obstacles arise. Collecting sample from Bajo volunteers in some communities was authorized and supported by the Indonesian government, but this kind of survey is still impossible in the Sulu, due to civil strife and armed conflict. Genomic data from Malaysia is available, but does not focus specifically the 'Bajau' ethnic group in Sabah. Our samples collection was bound to Indonesia; however, in North Kalimantan, we met volunteers who recently settled in Maratua island, having fled unrest and threats in Central and Western Sulu.

As will be argued below, the initial Sama-Bajau migration (when they were banished or forced to leave their homeland) took place around the 11th centuries, if not earlier. If we find somewhere a community outside the SB diaspora, but which "matches" with our Bajo genomic and language data, it does not prove that their current location fits into the SB homeland: since a thousand years, they may have moved too, by land if not by sea.

Last caveat, the Bajo community is very open to intermarriages with individuals from other ethnic groups. Many of my Bajo informants around the Flores Sea and Makassar Strait had a grandparent or a parent from another ethnic group. For instance, in the tiny island of Sapeken (Kangean archipelago, north to Bali), marriages with Mandar, Bugis, Makassar, Madura, even Chinese (before the 1930s) are usual. Then the *Bagai* (strangers) are easily assimilated into the local majority of *Sama*. We were aware that the genomic data would reflect a high degree of admixture with other ethnic groups – and it did.

In Kusuma *et al.* [2] article "The last sea nomads of the Indonesian archipelago: genomic origins and dispersal", we report genome-wide SNP analyses on 73 Bajo individuals from three communities across Indonesia – Derawan of Northeast Borneo, Kotabaru of Pulau Laut in Southeast Borneo and Kendari in Southeast Sulawesi. Readers interested in the methodology and detailed resutlts of this study are advised to read the full paper; here I will only rush into its conclusions.

Firstly, the "out of Johor" origin recounted in some myths can be ruled out. No particular genomic features links the Indonesian Bajos to Peninsular Malays. "All Bajo individuals fall within the Island Southeast Asia cluster, specifically with other Indonesian groups. As before, all three Bajo communities still form their own clusters with limited overlap. Most Bajo individuals lie close to populations from Sulawesi, such as the Bugis and Mandar. The Derawan Bajo cluster close to Philippine populations; the Kotabaru Bajo cluster close to Borneo populations; whereas the Kendari Bajo have connections with eastern Indonesia, such as Sumba and North Maluku, and with Papuans." [2].

Being "close" to neighbouring populations means that there were a lot of genetic admixture, resulting from intermarriages. These three Bajo communities (namely, Derawan, Kotabaru and Kendari) have even more genetic connections with their respective neighbours than between each others. It underlines that becoming Bajo is more a cultural move (getting assimilated into a Bajo community) than a strict matter of genomic ancestry.

The admixture with South Sulawesi is higher in Kendari and Kotabaru Bajo communities, and genetics analysis shows it happened multiple times, which means that intermarriages between Bajo and South Sulawesi individuals took place over several generations (and it still does). On the other hand, Derawan samples show much less influence of the South Sulawesi component: "the Bugis appears to be a surrogate population for the Derawan Bajo, in addition to Malay, Filipinos and Indians."[2] This figure fits well with the linguistic data I will present in part 3, and supports my hypothesis that following the initial migration, not all the exiles found refuge in the Sulu. Part of them settled and/or wandered in the Makassar Strait, mainly around South Sulawesi, i.e. much closer from their starting point.

However, we came upon a complete mismatch between genetics and linguistics regarding the likely Bajo homeland. "Despite a complex genetic history involving creolization and multiple admixture events, the genomic data are suggestive of a single population origin for the Bajo, converging on Southern Sulawesi." [2]. I take an opposite view: the SB languages are more linked to South-Barito (South Kalimantan) languages, than to any other language in Southeast Asia. There are many loanwords from Bugis in Indonesian Bajo, but these are borrowings only. The core of SB and Bugis syntax and lexicon are clearly unrelated (although they belong to the West Malayo-Polynesian family, like the majority of languages of Indonesia). After discussions with my geneticist colleagues, we agreed that this discrepancy could not be resolved now: "The linguistic and genetic evidence are therefore in broad agreement regarding the timing of the Bajo dispersal along the east coast of Borneo, but point to quite different locations for its origin: Southern Sulawesi for the gene pool and Southeast Borneo for the languages."

To my opinion, the very strong Bugis genetic component among Indonesian Bajos (except 'Derawan') could result from repeated admixture, over several centuries, which in turn highlights South Sulawesi as the most probable territory of origin for the Bajos. This has not been totally ruled out by my geneticist fellows: "the presence of a Southern Sulawesi genetic background in all Bajo communities may also result from contact directly between these three sea trading groups."

Genomics can be incredibly precise at assessing the age of admixtures. I was puzzled by the date given for the oldest admixture between Kendari Bajos and South Sulawesi populations: "62 generations ago (1736 years ago, assuming a 28-year generation interval)"; this takes us far back in time, at the end of the 3^{d} century (± 280 AD), when my own ancestors where subjects of the Roman Empire. This first admixture stage was composed of 90% South Sulawesi gene contribution and 10% of Papuan (a broad label, not limited to today's Papua province). This does not mean that the initial Bajo migration occurred so early; but it indicates that there were regular contacts between South Sulawesi and the Bajo homeland since the 3^{d} century, at least.

The Kotabaru samples analysis provides important information as well: "one admixture event between Indian (5%), Sulawesi Bugis (70%) and Bornean Banjar (25%) sources around 33 generations ago (925 years ago)."[2] This dating, 11th - 12th century (± 1100 AD), does not contradict the scenario proposed by Blust [15]: he assumes that the Bajo migration to Sulu occurred in the 9th century, simultaneously with the main migration from South Kalimantan to Madagascar. Implicitly, Blust timeline would entail that the Sama-Bajau and Malagasy ancestors were displaced at the same period, by the same powerful authority, from the same region of South Kalimantan… and were related genetically and/or linguistically.

This genomics study also found that the period of Bajo admixture with Sulawesi Bugis lasted until the 14th century, but I suppose that since then, intermarriages have occurred on a regular basis. Indeed, this seems very common today; this may be a new surge, following to the sedentarization of the last Bajo nomads around the 1980s in Sulawesi and their improving economic integration into modern Indonesia.

A detail is also worth to notice: the 5% Indian contribution into the admixture event spotted at the beginning of the 12th century is consistent with the spreading of Hinduism, along with Malay influence over the Western and Southern coast of Kalimantan. A Malay community was established in an area called Banjar, on the shores of a large bay, now filled by the Barito delta sediments. At that time, the current location of Banjarmasin city was in the middle of the bay.

The history of slavery, still underestimated in Southeast Asia, may also have impacted the genetic flows. Warren [16] shows that Sama-Bajau people were often the victims, and sometimes the perpetrators (esp. from Balangingi island, Sulu) of piracy. The usual pirates' bounty comprised men, women and children, abducted then sold, until the European colonial powers (after having been important buyers of slaves in the 17th-18th centuries), eradicated piracy, and subsequently slavery, in the second half of 19th century. Warren [16] underlines that intermarriages between slaves and their masters or other Sulu people were frequent, and after one or two generations, the slaves' children were assimilated in the local community. The Sulu pirates Ilanun and Balangingi had a network of safe harbours, including over Makassar Strait, for instance Toli Toli and Dampelas (Sulawesi), Tunku and Berau (Eastern Borneo coast). That we can find Bajo communities in all these places today is perhaps no coincidence.

Finally, genomics can determine if an admixture event was balanced or not between men and women. Interestingly, a sex bias pattern appears in these Bajo admixture events: the female gene flow is lower, which means that the gene contribution into the Bajo community was brought by more men than women. The same bias has been observed for other sea nomad populations, like the Moken in Thailand and Myanmar. It may correspond to a weaker social and political position, compared to dominant local ethnic groups, for instance the Bugis, the Mandar, the Banjar… We should take myths more seriously: a Bajo lady or princess marries a local ruler, not the other way round.

IV. Linguistic data: a new mapping of Indonesian Bajo language

The Sama-Bajau (SB) language family comprises a dozen of languages, including Indonesian Bajo(s). Some are mutually intelligible (for instance in the Sulus) and could have been described as a dialect chain. Indonesia is supposed to host one and only of SB languages, labelled Indonesian Bajo, a view that I will challenge. Pallesen [17] has shown that in Sulu archipelago (spanning between Mindanao and Sabah) the Sama-Bajau were the first settlers, circ. 9th century AD. They were then subdued by the Tausug from Mindanao, and mutual borrowings of vocabulary occurred between Tausug and SB. However, Pallesen notes that SB is not a Philippine-type language, therefore the Sama-Bajau must have originated from an unknown region of Indonesia. Pallesen believes that much later, from the 14th century onwards, some SB groups settled westwards in Sabah and southwards along the coasts of Sulawesi, and later until the Eastern Lesser Sunda islands. In

my view, Pallesen's proposed stages and dating of the Bajo arrival in Indonesia is not exact. But at the time of his fieldwork, he had no indication about the Sama-Bajau territory of origin.

Blust [15] convincingly shows that SB shares lexical innovations with South Barito languages (Southeast Kalimantan). He proposes the following scenario: around 800 AD, an inland population from South Barito was required by the Sriwijaya empire to become freight shippers through the Strait of Makassar, until South China. An obvious stopover on this route was the Sulu archipelago, where the Sama-Bajau would eventually settle. For the subsequent stages of the Sama-Bajau migration, he believes that Pallesen stages apply. This scenario can be summarized as follows:

- ±800 SB leave South Kalimantan northwards to the Sulu and West Mindanao (South Philippines)
- ±1300 Some SB groups leave Sulu to Sabah, Sulawesi, Makassar strait.
- After ±1300 the Tausug from Mindanao invade the Sulu and subdue the SB. Vocabulary exchanges between Sulu SB and Tausug.
- The Sulawesi Bajo settle progressively southwards, until Lesser Sunda Islands.

I gathered lexical and grammatical data in various Bajo communities in Indonesia, and crosschecked it with the available documentation on SB (mainly from the Philippines and Malaysia, because Indonesian Bajo is much less documented). I noticed that there is not one and only SB language in Indonesia, as stated by Pallesen [17], Akamine [18], Lewis *et al.* [19], but at least two: one around South Sulawesi and Lesser Sunda Islands that I call 'Flores Sea Bajo', and another SB language, clearly related to Central and West Sulu Sama, spoken on Kalimantan East Coast, north from the Cape Mangkalihat (and including Derawan), and on the north coast of Sulawesi as well, across from the Sulu. In addition, the Bajo language spoken from South Kalimantan (Kotabaru) up to Cape Mangkalihat is either a dialect of Flores Sea Bajo or a distinct language among the SB family. Place lacks in this article to discuss this typological issues.

SB languages display a large number of Malay loanwords. Malay linguistic influence does not mean necessarily a Sriwijaya empire direct rule over South Kalimantan (which is not documented)[20]. Yet, Malay language and Hindu religion reached this region, as can be inferred from the rise of Banjar. Today's *bahasa Banjar* (Banjar language), a local lingua franca in the city of Banjarmasin and all around is southern Kalimantan, can be considered as a creole of Malay and local South Kalimantan languages. Adelaar [21] detected Malay loanwords in Malagasy, a language whose roots go back to the South Barito language family as well. This proves that the Malagasy pioneers had already borrowed Malay words before they sailed (or were carried by sailors) to Madagascar. Adelaar also identified very few South Sulawesi loanwords in Malagasy, which seems not so odd if we keep in mind the genomics findings: the Bajo ancestors intermarried with South Sulawesi (Bugis) as early as the 3^{d} century AD. If the Malagasy and Sama-Bajau ancestors were neighbours in South Barito, they may have set the same kind of relationships with South Sulawesi people.

There are more Malay loanwords in Sama Bajo languages than in Malagasy: up to 19% of the lexicon in Mapun, a South Philippines SB language, comes from Malay according to Blust [15]. This may reflect the 200 years gap between two events, namely the migration to Madagascar (± 800 AD) and the initial Bajo migration (± 1100 AD, according to the admixture event involving a 70% Bugis gene inflow). Many Malay words were obviously borrowed by the Sama-Bajau before they were driven out of their homeland, while some other loanwords have been adopted centuries later; the fine phonological clues that support these distinct borrowing layers can be found in Blust [15]. Interestingly, the Sama-Bajau borrowed Malay words related to sea navigation, while they retained their own words to refer to parts of a boat. This feature points to a population living on a riverside or a delta; i.e. the Barito, a very large river, still a busy 'highway' to central Kalimantan.

Only the Flores Sea Bajo borrowed Bugis words, along with some South Celebes cultural traditions, while I did not find a single loanword from Tausug. For their part, the SB languages of the Philippines retain no trace of Bugis language, but have exchanged many words with Tausug (a displaced language from Mindanao). In sum, we have Flores Sea Bajo with Bugis loanwords but no Tausug loanwords; and Sulu SB languages with Tausug loanwords but no Bugis loanwords. Vocabulary borrowing usually happens when two communities are in close contact for quite a long period. Therefore, examining the linguistic and genomic data on today's Bajo people living around the Flores Sea, we have to admit that their ancestor never settled in the Sulu.

After being driven out their homeland (South Barito area, South Kalimantan), the Sama-Bajau did not follow altogether a linear route northwards to the Sulu (1500 km away), then five centuries later, back southwards. If people have to flee a serious danger, like war or miserable slavery, they will probably run (in this case, sail) in any direction to save their lives and preserve their freedom. They don't care about staying altogether and settling at the same refuge location. This is what the SB myths tell us, if we dare to interpret the symbols and metaphors: a powerful foreign authority forced them to leave their homeland and they subsequently scattered until today's diaspora. The peaceful scenario proposed by Blust seems more speculative: firstly, because the Sriwijaya empire was obviously master of the seas, and was probably not short of seamen staff to the point of teaching how to sail to the Barito river people and offering them professional opportunities as cargo carriers and traders. Secondly, when people engage freely in long distance trading, they retain their main harbour as an operating base, coming and going, but keeping their homeland in mind. This is what other Indonesian maritime-oriented ethnic groups did later, i.e. the Minangkabau and, again, the Bugis.

Today, no 'SB-like' language can be positively identified in the South Barito region; it would be ideal to come upon a witness language there and conclude that "these speakers are

the descendants of the Sama-Bajau who remained in the country". However, there are some common lexical innovations (that is, words that do not reflect an Austronesian etymon, and are used only in this area). Blust [15] found that "There are about two dozen apparent innovations that are known only in SB and Barito languages, or only in these languages and one or two others. Some of these are lexical, and may be common innovations, while others involve irregular sound changes in the SB languages that point to early borrowing." I found about 20 additional words. Altogether, 45 shared lexical innovations seem a poor harvest, but sufficient to argue that it is not due to chance. Proto-Sama-Bajau was obviously related to the South-Barito cluster of languages, but is not the mother-language of any of the languages still spoken today in South Kalimantan.

V. CONCLUSION

In sum, I propose the following timeline leading to today's Sama-Bajau diaspora:

- End of the 3^{d} century : related ethnic groups live in the South Barito region. A least one of these groups, the Sama-Bajau, have trade and/or cultural links with South Sulawesi, leading to intermarriages (Bugis admixture initial event).
- The Sama-Bajau were initally river or delta dwellers (i.e. Barito river), but progressively shift to travelling by sea. It seems that sea shipbuilding and navigation technology is borrowed from the Malays.
- ±1100 The Sama-Bajau leave their homeland (Barito river / bay / delta), South Kalimantan, under the pressure of a foreign power. Apparently, no one remained in the country, or those who were left behind merged with other ethnic groups.
- Part of the exiles settle in the Sulu archipelago. Other groups (i.e. the Bajo) find refuge closer from South Kalimantan, on the shores of Makassar Strait, and especially in South Sulawesi. In both clusters, sea nomadism develops, but is not the only way of life.
- ± 1300 The Sulu Sama-Bajau are subdued by the Tausug from Mindanao. Sulu SB languages diversify and borrow many words from Tausug (and vice-versa).
- ± 1500 From the Makassar Strait, the Bajo develop long distance trading, as far as Malacca, Maluku, probably Southern China. Many of them specialize in gathering marine commodities for their Bugis patrons.
- ± 1600 The Bajo begin to settle in small hamlets around Sulawesi in the anticlockwise direction (Boné bay, Muna, Buton, Kendari, Banggai, Tomini bay…) and to Lesser Sunda Islands and Maluku. Some Sulu SB begin to settle in Sabah, on North Kalimantan and ashore the North coast of Sulawesi.
- ± 1700 Following the fall of Goa-Makassar to the Dutch VOC (1666), South-Sulawesi Bajos shift to the authority of Boné-Bugis. They convert to Islam. During the colonial period, the Bajo and Bugis long distance trade shrinks. Eventually, the Bajo will be limited to fishing and local trading of marine commodities.
- 1750-1900 The Bajos, like other coastal dwellers, are often victims of pirates' raids, on the sea or ashore. Some others (esp. Balangingi island, Sulu) engage into piracy, selling captives as slaves.
- 1970s most of the sea nomads sedentarize, often under pressure of their respective governments. Today, almost all of the Indonesian Bajos are fishermen, fish wholesalers, or seaweed farmers. Their Sulu cousins are entangled in the violent conflict in the South Philippines.

The important finding is that, from the South Barito homeland, the Sama-Bajau exiles did not find refuge altogether 1500 km northwards in the Sulu and West Mindanao (South Philippines), then stayed there for centuries before some of them sailed back south to Makassar Strait and South Sulawesi. In my view, shortly after their eviction from their homeland, they split up in two clusters; one settled in the Sulu and West Mindanao area, the other one ashore Makassar Strait, mainly on South Sulawesi coast. These two clusters had few relations and lost touch. Their languages (about 8 Sulu SB languages on the one hand, Flores Sea Bajo on the other hand) are not mutually intelligible now, although they clearly belong to the same SB language family.

This team research combining genomics and linguistics has advanced the understanding of the Sama-Bajau diaspora history. The genetic admixtures dating roughly matches with the stages proposed by the linguists. However, there is still a discrepancy: genetics tells that the Sama-Bajau originated from South Sulawesi (broadly speaking, the Bugis area today). For their part, the linguists believe that the forgotten homeland of the Sama-Bajau was located in South Kalimantan, most probably on the banks of the Barito river. Both cannot be true, therefore additional surveys and more transdisciplinary collaboration is needed to solve this question.

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Revitalizing Balinese Woodcraft Industry Through Applying Nanocomposite Reinforced Synthetic Wood Technology

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***Abstract*—Our finding on a technology for producing woodcrafts using nanocomposite reinforced synthetic wood becomes an alternative solution for solving the current problems of Balinese woodcraft industries. The study on applying the current developed synthethic wood technology was conducted in order to analyze the production cost comparing toward the cost using natural wood, to gain the market responses for analyzing the comsumer satisfaction and the market competitive prices and to gain the stakeholders for innitiating a cluster industry. The costumer satisfaction as well as stakeholder acceptibility on the synthetic wood technology could revitalize the Balinese woodcraft industries.**

***Keywords*—nanocomposite; synthetic wood; woodcraft**

I. INTRODUCTION

The trend of eco-labeling on industrial wood products such as woodcrafts and the increasing of people awarness on tropical forrest protection affected the world rejection of various natural woodcraft products from tropical countries, especially Indonesia. The reason is, according to State of World Forest Report, Indonesia has the 5th world widest rain forrest, but the forrest damaging rate is the 2nd world number [1]. Meanwhile, the wood plantation can not fulfill the massive increase of wood needs worldwide. Because of the lack of natural wood availability as the main raw materials of woodcraft industries and the rejection of tropical woodcraft by exported proposed countries, most of Balinese woodcraft industries have been facing a serious problem.

Synthetic woods made of cellulosic fibers from wood particles as well as lignocellulosic fibers from non wood particles were taken attention worldwidely since the first introduction of particle board from wood powder [2]. The synthetic wood technologies have been well developed since the finding of resinous addesives and the making procesesses of various kinds of synthetic woods.Commonly, the synthetic wood making processes were divided into three main processes, namely, dry, wet-dry, and wet processes [3]. The quality improvement of synthetic wood composites was further developed for fulfilling the application needs, such as stabilization from heat and sun rays damages [4], as well as enhancement of performance, strength, durability, weight, weather overcoming, and other properties [5-7]. Furthermore, the use of non wood cellulosic agrifibers [8-10]has some advantages such as their fast growing of plantation comparing to natural wood trees, their ability to give value addition of agricultural wastes, and environment friendly. However, they have also disadvantages such as the lack of strength as well as lack of ability toward fungies, weather, temperature, and sun rays. Thus, there is a need to improve the making processes such as the use of appropriate binder, the addition of reinforcer, as well as the improvement of texture and color.

Since the mapping of potencies of fifthteen high siliconeous tropical biomasses was reported [11], the silica-carbon nanocomposite from the rich silicon biomasses was produced and it was used for reinforcing the prototipe synthetic wood made of the lignocellulosic agrifibers [12-14]. The current study reported the initial industrial production of some Balinese synthetic woodcrafts that using the materials and technology as well as their commercialization processes for gaining the market and stakeholder responses.

II. METHODS

A. Making Some Balinese Woodcrafts

First, using triaxial blends of cellulosic fibers, silica-carbon nanocomposite, and resin and a process called moulding and casting was used for produsing some Balinese woodcraft. The composition of the blend and the processes of making synthetic woodas well as the the measurements of physical properties, namely density and moisture, were found elsewhere [12-15]. The mechanic properties of produced synthetic wood namely modulus of elasticity (MOE), modulus of rupture (MOR), and compresion parallel on grain were tested using ASTM 143-94 procedures and calculation. Universal testing machine (UTM) with 5 tonnes load was used for the testing of 5 synthetic wood samples.

B. Market Survey and Innitating A Cluster Industry

A market survey was conducted by inviting some foreigners and domestic costumers candidates into a showroom located at Ubud area of tourisms for 2 months. The acceptibility concerning product quality and the selling prices some woodcrafts were compared towards the market prices of the market prices of the counterpart natural woodcraft products.

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Through a focus group discussion involving some stackholders, a cluster industry was designed and innitiated.

III. RESULT AND DISCUSSION

There were 9 items of Balinese woodcrafts already produced, where each item was at least 2 sets (colored and non colored or original), namely Ganesha statue (non colored), Ganesha statue (acrilyc colored), horse statue (non colored), horse statue (acrilyc colored), komodo statue (non colored), Balinese carved door set (non colored), Balinese carved door set (prada colored), Balinese carved squared four pool Gazebo set (non colored), and Balinese carved squared four pool Gazebo set (golden colored). Because of synthetic wood thickness of proposed door set and Gazebo's four pool set, the mechanical properties such as MOE, MOR and compressive strength were measured. The results of measurements on physical and mechanical properties were shown on Table 1.

TABLE 1. PHYICAL AND MECHANICAL PROPERTIES OF SYNTHETIC WOODCRAFT

No	Properties	Measurement Results
1.	Density (g/cm^3)	0.49 ± 0.01
2.	Moisture (% w/w)	2.73± 0.02
3.	MOE (Kg/cm^2)	110,673.40 ± 2,967.56
4.	MOR (Kg/cm^2)	1,272.73±10.38
5.	Compressive Strength parallel to grain (Kg/cm^2)	676.78±4.68

The results of physical and mechanical properties measurement showed that the synthetic wood was catagorized first grade quality at the Indonesian standard of construction woods according to the 1961 Indonesian Regulations of Construction Woods PKK NI-5 Peraturan Konstruksi Kayu Indonesia PKK NI – 5 published by the Directorate General of Cipta Karya, The Department of Public Construction of Republic of Indonesia. Compared to the properties of Merbau timber that have MOE, MOR, and compressive strength parralel to grain 162,728.43 kg/cm², 1,090.64 kg/cm², and 605.42 kg/cm² respectively [15], the values of MOE and MOR of the synthetic wood are of less quality than those of Merbau timber, however its compressive strength is better than that of Merbau timber. Compared to the proporties of two varieties of Teak timbers (Clone and Seeds) having MOEs (90,000 ± 9 kg/cm^2 and 108,000 ± 11 kg/cm^2), MORs (736 ± 26 kg/cm^2 and 941 ± 80 kg/cm^2) and compressive strength parallel to grains (203 ± 18 kg/cm^2 and 163 ± 9 kg/cm^2) respectively [16], the MOE and MOR values of the synthetic wood are higher than those of both Teak timbers varieties, however the compressive strength parralel to grain of the synthetic wood is lower than that of both Teak timber varieties. It means that the mechanical properties of synthetic wood is in between of Merbau and Teak timbers.

Results of production cost analysis showed that the cost of making synthetic woodcrafts in comparing with Teak woodcrafs is about 60-70% depending on the size and design complexity of products. It means that the synthetic woodcrafts are more efficients than that of Teak woodcrafts. The cost component of carving allowance for making carved woodcraft from Teak timber is the most contibution on the cost inefficiency comparing with the moulding technique that was used for making the carved synthetic woodcrafts. The need of time spans of skilled carverter is much reduced by the moulding technique.

Results of market feasibility analysis showed that the selling prices of the synthetic woodcrafts were30-50% cheaper that those of the counterpart natural woodcrafts as depicted on Table2.

TABLE 2. COST PRODUCTION (CP), FEASIBLE MARKET PRICE (FMP), BASIC SELLING PRICE (BSP), AND PRODUCT MARKET PRICE OF COUNTERPART NATURAL WOODCRAFTS (PMP-CNW)

No	Woodcraft Products	CP (IDR. 1000)	FMP (IDR. 1000)	HPP (Rp. x 1000)	HPPP KA (Rp. x 1000)
1.	Ganesha Statute (non colored)	650	800	725	1,500
2.	Ganesha Statue (colored)	950	1200	1,075	2000
3	Horse Statue(non colored)	275	700	487.5	1750
4.	Horse (colored)	775	1,200	987,5	2500
5.	Komodo Statue (non colored)	500	700	600	2500
6.	Carved Door Set (non colored)	4,500	7,500	6,000	12,500
7.	Carved Door Set (colored)	8,500	12,500	10,500	22,500
8.	Carved Four Pole Gazebo (noncolored)	12,000	15,000	13,500	25,000
9.	Carved Four Pole Gazebo (colored)	17,000	25,000	22,000	40,000

The 123 visitors of product showrooms consisting of public community (49%), entrepreneurs (32%), foreigners(19%) as currently published [17] concluded that 60% visitors gave responce on the market feasibility of the synthetic woodcrafts in catagory very good, 81% visitors wanted to buy the products in category was very high, and there were 77% visitors who stated their interest in getting involved in marketing the products in catagory very high. There are five main reasons why visitors interested in buying and/or getting involved in selling the synthetic woodcrafts, namely cheaper prices, environmental friendly, unique, and light. A product sample of synthetic woodcraft can be seen in Fig.1

Fig. 1 Synthetic Woodcraft of Horse Statues

Focus group discussion was held by inviting stackholders namely representatives from the Office of Industry and Trade Service Bali Province, representatives from the Local Office of Cooperation, Trade and Industry of Buleleng Regency, the representatives from the Buleleng Association of Small Industry Entreprises, and representatives from the Trade and Industry Chamberof Bali Province, along with representatives from Bali Zen Groups, entrepreneurs and mass media. The discussion focused on building a grand design of industrial cluster for the synthetic wood technology and their synthetic woodcrafts. They commited to sign memorandum of understanding (MoU) for involving the clusters depending on their potencies and rules.

The structure of the proposed cluster industry consists of (1) policy and infrastructure facilitator such as stackholders from government, mainly the Office of Industry and Trade Service, Directorate of Research and Community Services, and Governor Office as well as Regency Office, (2) funding facilitator from Bali Development Bank (Bank Pembangunan Daerah Bali), (3) science and technology developer (academicians from university), (4) design and artcrafts developers (academicians from art and design institute), (5) providers of raw and adding materials (PB. Suwela Amertha, Jagaraga Buleleng), (6) production of various synthetic woodcrafts (Rugos Art and Casting, Balipot, Wahyu Artha Handicraft, Siapa Sangka Handicraft and APIK Buleleng), and (7) marketing (PT. Sorga Indah, Bali Zen Group, CV. Citra Dewata and Krisna Oleh-Oleh). The schematic structure of the proposed cluster industry can be seen in Fig.2.

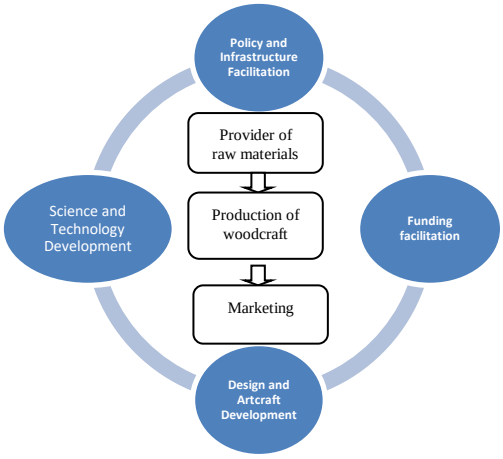

Fig.2. Schematic Representation of the Proposed Cluster Industry

IV. CONCLUSION

The synthetic woodcrafts from high siliconeous agrifibers of tropical biomass have equal quality comparing with natural woodcraft products. The implementation of the synthetic wood technology is a strategic effort in revitalizing the current Balinese woodcraft industries because of its advantages in terms of cost production, value addition of agricultural wastes, environment friendly as well as time and cost efficiency.

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Application of Climate-Driven Model on the Risk of *Opisthorchis viverrini* Infection in Thailand

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***Abstract*— *Opisthorchis viverrini* (*O. viverrini*), known as a small liver fluke, is a parasite that lives in the bile duct of the mammals including humans. Opisthorchiasis caused by *O. viverrini* infection is a major public health in many countries in Southeast Asia including Thailand and significantly associated with the development of cholangiocarcinoma (bile duct cancer). Environmental factors, particularly climate, significantly influence the life-cycle of *O. viverrini* as well as its intermediate host snails. The climatic parameters such as soil moisture, temperature, and precipitation may alter the geographical distribution of *O. viverrini* by affecting the suitability of freshwater bodies for hosting both parasite and snail populations. Thus, opisthorchiasis is expected to respond to the climate change. However, the influences of climate on the incidence and distribution of opisthorchiasis in Thailand has not yet been addressed. This study aimed to investigate the interaction between climate and opisthorchiasis levels in Thailand using the climate-driven disease model. The climate data and the prevalence of *O. viverrini* infection in 2009 were obtained from the Thai Meteorological Department and Department of Disease Control, Ministry of Public Health, respectively. The risk maps illustrated that the risks of opisthorchiasis in the North and Northeastern regions were found in May, June, July, and September with the highest overall predicted risk being in July. The climate-driven risks of opisthorchiasis in July are consistent with the risks determined from the observed prevalence of *O. viverrini* infection using hot spot analysis. With that, this model can be used to forecast both area and timeframe of opisthorchiasis at the local scale, which can be used to support health planning for implementation of disease prevention and control strategies.**

Keywords*— *Opisthorchis viverrini, Climate change, Climate-driven disease model

I. INTRODUCTION

Infection with *O. viverrini*, also known as opisthorchiasis, is a major public health problem in many countries in Southeast Asia including Thailand [1,2]. The liver fluke (*O. viverrini*) infection in Thailand is variable in each region. Northeastern (34.6%) region has the highest prevalence, followed by central (6.3%), northern (5.6 %) and southern (0.01%) regions with the nation-wide average prevalence of 14%, or 7 million people were infected across the country[11]. People with an infection have a behavior of eating raw meat of cyprinoid fish, which allows parasites to enter to their bodies. Cyprinoid fish are the second intermediate hosts of *O. viverrini*. Infection of fish occurs by contact with cercariae released from the first intermediate snail host, *Bithynia* spp[3].

Climate plays a significant role in the determination of geographical distribution of *O. viverrini* [3,4,5]. The infection of *O. viverrini* in snail is temperature-dependent in which the increase of 1°C resulted in increased odds of infection by 5.4 %, whereas the temperature of 34°C can be increased the infection rate as 44.14 %[5]. Furthermore, there is a report that an annual incidence rate of liver fluke infection in people living in Guangdong City, China corresponded to the increase of temperature and rainfalls[6]. In addition, the distribution of parasites is sensitive to the fluctuations of temperature and precipitation because the water temperature affects sex, size, as well as the survival and reproduction of the snail intermediate hosts of liver flukes[6].

The prevalence of *O. viverrini* infection in Thailand is changing with close relation to the environmental factors. The

goal of this study is, thus, to assess the impact of climate changes on *O. viverrini* infection. We first investigated the relationship between climate and the risk of *O. viverrini* infection using the climate-driven disease model. The precision of the model was validated by comparing the model to the risk areas as determined by the hotspot analysis. Taking all the data together, the results from this study will provide better understanding on the possible impact of climate changes on *O. viverrini* infection, which would be beneficial for future policy planning.

II. METHODOLOGY

Study location

Based on the prevalence of *O. viverrini* infection, the Northern and Northeastern regions of Thailand were chosen as the study areas to analyze the risk of *O. viverrini* infection.

Prevalence data of O. viverrini infection

The prevalence data of *O. viverrini* infection in 77 provinces of Thailand in 2009 were obtained from the Department of Disease Control, Ministry of Public Health,Thailand.

Climate data

Climate data in 2009 were obtained from the Thai Meteorological Department. Monthly data with the following climate variables: minimum, maximum and mean monthly temperature (ºC), number of rain days per month (>1 mm), and monthly rainfall (mm) were used.

The climate-driven disease model analysis

The climate-driven disease model was used to calculate the risk of opisthorchiasis using the Ollerenshaw index[7]. The monthly *O. viverrini* risk value (*Mt*), which is dependent on the interactions between temperature, precipitation and the frequency of rainy days, was calculated as follows:

$$Mt = n\left(\frac{R}{25.4} - \frac{P}{25.4} + 5\right) \quad \text{(Eq.1)}$$

where Mt = Liver fluke risk value (0-100 for a given month),
n = Number of rain days per month (defined as day with precipitation more than 1 mm/day)
R = Rainfall (mm/month)
P = Potential evapotranspiration (mm/month)

The Hargreaves equation will be used to calculate (P) [8], where Ra is the extra-terrestrial radiation (MJ m^{-2} day^{-1}); with T_{max} and T_{min} are the maximum and minimum temperatures in ºC, respectively.

$$P = 0.0023 \times 0.408 \times Ra \times \left(\frac{T_{max} + T_{min}}{2} + 17.8\right) \times \sqrt{T_{max} - T_{min}} \quad \text{(Eq.2)}$$

The Mt value is defined to zero when the mean monthly temperature is below 10ºC to reflect the low development thresholds for both the free-living stages of *O. viverrini* and its main snail intermediate host in Thailand[9]. The monthly *Mt* values were applied to forecast for climate-driven risk of opisthorchiasis in 2009. The monthly *Mt* values are classified with four critical thresholds to identify risk as follows: $Mt \leq 300$ = no risk; $300 < Mt \leq 400$ = low risk; $400 < Mt \leq 474$ = medium risk; $Mt > 474$ = high risk[10].

Hot spot analysis

The location that has statistically significant cluster of opisthorchiasis (risk area) was identified using the hot spot analysis. For hot spot analysis, a Getis-Ord Gi* statistic, which produces a GiZScore and a p-value for each feature, was calculated for each feature according to the properties of its neighbor features using the following formula:

$$G_i^* = \frac{\sum_{j=1}^{n} w_{i,j}x_j - \bar{X}\sum_{j=1}^{n} w_{i,j}}{S\sqrt{\frac{n\sum_{j=1}^{n} w_{i,j}^2 - (\sum_{j=1}^{n} w_{i,j})^2}{n-1}}}, \quad \text{(Ep.1)}$$

$$\bar{X} = \frac{\sum_{j=1}^{n} x_j}{n}, \quad \text{(Ep.2)}$$

$$S = \sqrt{\frac{\sum_{j=1}^{n} x_j^2}{n} - (\bar{X})^2}, \quad \text{(Ep.3)}$$

where G_i^* denotes a Getis-Ord Gi* statistic,
x_j is the attribute value for feature j,
w_{ij} is the spatial weight between feature i and j,
and n is equal to the total number of features.

The results of GiZScore tells features with either high or low values cluster spatially. To be statistically significant hot spot, a feature should have a high value and surrounded by other features with high values. The local sum for a feature and its neighbors is compared proportionally to the sum of all features[11].

III. RESULTS AND DISCUSSION

Predicting the risk of opisthorchiasis using the climate-driven disease model

The predicted risk of opisthorchiasis due to climate in the North and Northeastern regions in 2009 was significantly higher in May, June, July, and September with the highest overall predicted risk in July (Figure 1). From the risk map in July, the provinces with the high risk level (red area) were Bung Kan, Nakhon Phanom, Ubon Ratchathani and Sakon Nakhon, in the Northeastern region. These results indicated that the months when climatic conditions were found to be optimal for the development of the parasite as well as its intermediate host snail in Thailand are May to September, which are the rainy season. This is well in line with several reports demonstrated that rainy season is the most suitable season for the development of the parasite in the environment[12]. In addition, no risk of opisthorchiasis was observed during the dry season (from March to May) and cold season (from November to February). It should be noted that the risk of opisthorchiasis was not found in August and October, which are considered in the rainy season in Thailand. It could possibly be explained by the fact that, in August 2009, there was the low pressure covered the upper part of Thailand resulting in the decrease of precipitation for the Northern and Northeastern regions. On the contrary, in October 2009, there was the high pressure covered the upper part of Thailand resulting in the cool weather in the Northern and Northeastern regions.

Predicting the risk of opisthorchiasis using the hot spot analysis

To validate the predicted results obtained from the climate-driven disease model, the hot spot analysis was used to identify clusters of opisthorchiasis based on the prevalence data of *O. viverrini* infection. As shown in Figure 2, the Northeastern region of Thailand has very high clustering (hot spots preseted as red dots) of *O.viverrini* infection, indicating that this region is at high risk of opisthorchiasis. In contrast, a very high clustering of low *O.viverrini* infection (cold spots presented as blue spots) was found in the Central, Eastern, and the lower part of Northern regions, indicating that these regions are at low risk of opisthorchiasis. There was no clustering of *O.viverrini* infection (white spots) in the Western and Southern regions, as there were no observed infection. Furthermore, the hot spots of *O.viverrini* infection found in Northern region were well in line with the predicted risks of opisthorchiasis based on climatic data. These results indicated that the climate-driven disease model is suitable for forecasting the risk of opisthorchiasis in Thailand.

IV. CONCLUSION

This study demonstrated that there are strong links between climate and *O.viverrini* infection, and thus, the climate-driven disease model can be used to assess the impact of recent and potential impact of future climate changes on the risk of opisthorchiasis.

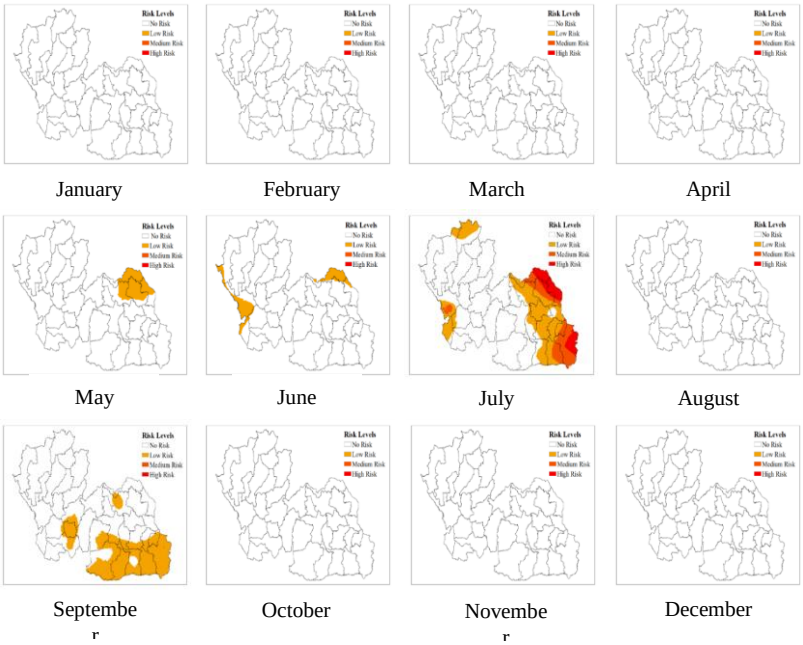

Figure 1. Risk maps of opisthorchiasis predicted using the climate-driven disease model in 2009. The risk categories were classified as follows: no risk: $Mt \leq 300$ (white), low risk: $300 < Mt \leq 400$ (brown), medium: $400 < Mt \leq 474$ (orange), high risk: $Mt > 474$ (red).

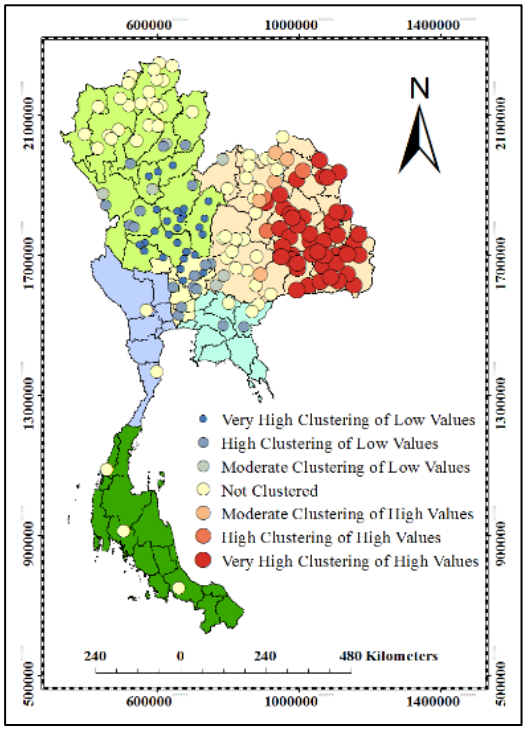

Figure 2. Hot spot analysis using the Getis-Ord Gi* statistics displays the risk of opisthorchiasis in Thailand, 2009.

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Parenting Experience in the Indigenous Balinese Village, Indonesia

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***Abstract*— The customary village of Tenganan Pegringsingan is one of the oldest villages in Bali that still practices the ancient tradition in everyday life. The familial system that adopts the bilateral system and the peculiarities of the village of Tenganan Pegringsingan bring about a unique parenting experience for the parents and the child. This study was aimed at exploring parenting experience in the bilateral system viewed from the social-emotional aspect in children of the customary village of Tenganan Pegringsingan. The study employed indigenous psychology with indigenization from within. It used in-depth interview and observation as the methods of data collection. The results showed that children in Tenganan Pegringsingan culture consist of two stages of development called *cerik* and *rare*. Each has a unique developmental phase and influences the parenting practice experience. The value to maintain the purity of lineage kindles the spirit of everyday parenting experience. These nurture values are the basis of the community's success in maintaining its existence as an old village (Bali Aga) in the midst of today's modern society.**

Keywords: indigenization, child's socio-emotional development, parenting experience, Bali Aga

I. INTRODUCTION

Involvement on the tradition in community village is a key step to build the good social connection for every community members [1]. The community members who actively have a good engagement with others, perceive their neighborhood to feel safe, the ability of parents to support their children, children's safety and have a positive sense of belonging [2]. This study focused on an observation of parenting experience in early year child's social and emotional development in the community village. The observation was made since the child's social and emotional development will influence the child's later development. Foot, Woolfson, Terras, and Norfolk state that social, emotional and behavioral problems will hinder the child from a full participation in the preschool curriculum and opportunity to get an education, and from optimization of his or her ability [3]. Emotion can be defined as external physical activities, both in the form of pleasant and non-pleasant reaction to a certain event or mental condition. The pleasant reaction is related to a positive emotion whereas the non-pleasant one to a negative emotion [4].

Emotion is a form of communication for the child to state his or her need and feeling to other people. Emotion plays a role in influencing personality and the child's adaptation to his or her social environment [5]. The family is the first and the most important environment for the early year child's emotional development. It is in the family the child has his or her first experience. Family plays the most important role in internalizing the basics of emotional experience. Even in more specific terms, a family can become emotional security in the first stage of the child's development. Family can also take the child to a larger environment. The first social experience outside the home completes the experience at home and is the most important determinant of the social attitude and pattern of the child's behavior.

The writers described the social and emotional development of the early year children at the customary village of Tenganan Pegringsingan to explore parenting experience with a bilateral system. The family system of the village of Tenganan Pegringsingan is bilateral and is obviously different from that in other Balinese villages [6]. The consequence of the bilateral system is that a male child and a female child have the same statuses o rights. All of the children are heirs to the properties of their parents' (both their fathers and mothers) irrespective of the gender of the children or the order of their births. This system will influence the difference in the parenting practice by their parents compared to that in other villages in Bali [7]. The parenting practice in the customary village of Tenganan Pegringsingan plays the role as the supporter of the existence of the culture and tradition in the community of Tenganan Pegringsingan [7].

This study was conducted at the customary village of Tenganan Pegringsingan, situated in the district of Manggis in the regency of Karangasem, Bali. The customary village of Tenganan Pegringsingan (henceforth called Tenganan) is one of the oldest villages in Bali. Geographically, the position of Tenganan is in a canyon between some hills that surround the village. At a close observation, the series of hills in Tenganan starts from *Bukit Kangin* continues to *Bukit Kaja* and *Bukit Kauh* that form the natural walls that split the

village from other villages. Generally, Tenganan is an area that consists of hilly land, dry land, and wetland. The topographically, Tenganan stretches from north to south, with the total area of 917.2 Hectares. Most of Tenganan villagers are peasants (59.4%), sellers (11.8%), artisans (15.9%), civil servants (6.1%), private business workers (4.8%), and others (2%). The population is 577. On the basis of the distribution of the villagers, most of them have got some education from kindergarten to tertiary education.

Historically, some villages that are regarded as the old villages in Bali are Sembiran, Sidatapa, Sukawana in Singaraja in the north part of Bali and the famous Trunyan in Bangli, and Tenganan Pegringsingan and the customary village of Dauh Tukad in Karangasem. They are closely related historically, religiously and traditionally [8], [9]. As an old village, Tenganan is a village that has developed into a very famous cultural tourism village. The position of Tenganan that is close enough (only about 3 kilometers) from the Candi Dasa beautiful beach makes it one of the tourism objects in Karangasem particularly and in Bali generally. The most important reason why tourists go to this village is to see the "uniqueness" of the culture and customs. As an old village in Bali, Tenganan has unique characteristics. A close observation of this village shows that the village is different from the villages that are generally found in Bali. Not only does it differ in the context of religion (the villagers admit that they are Hindus with the sect Indra (the God of war and rain), it also differs in the ritual practice and everyday life social practices, including particularly in the method of educating and parenting of children. The study focused on the experience of parent and community involvement and the local value of childcare in Tenganan Pegringsingan.

II. RESEARCH METHOD

This study used two approaches, which were complementary to each other. The approaches were indigenous psychology and phenomenological interpretive analysis. Through indigenous psychological study, the researchers wanted to understand the parenting experience with a bilateral system from the social and emotional aspects of the development in the children at the customary village of Tenganan Pegringsingan in their cultural context [10]. The indigenous psychological study oriented to the strategy of indigenization from without. In the indigenization from without the researchers built a more systematic knowledge of the parenting experience with a bilateral system from the aspect of the social and emotional development of the children that could be tested theoretically and empirically with the local cultural context of the customary village of Tenganan Pegringsingan.

The phenomenological interpretative analysis was used to help the researchers in exploring the deep meaning of the particular experience of the individuals and people involved in the experience [11]. In the phenomenological analysis, the meaning of the personal life experience was explored from the people that were directly related to the experience [12]. The end result of the two approaches that were employed complementarily was a new knowledge about the parenting experience with bilateral system viewed from the aspect of social and emotional development in the children in the customary village of Tenganan Pegringsingan in their cultural context.

III. FINDING AND DISCUSSION

The life cycle concept in Tenganan Village. The people of Tenganan believe that the life of the people of Tenganan consists of a life cycle that rotates like a wheel. Ramseyer describes the pattern of the life cycle of the people of Tenganan as Theater of the Universe taken from the cradle ritual [13]. In the cradle ritual, there are four stopping points, namely bottom (marking the birth state), left (marking the adolescent state), top (marking the adult state) and right (marking the senile state). The cradle rotates to the left (anticlockwise). The rotation to the front marks the maturity, the physical development, and increase in activity. The four points in the cradle at the same time become the marks of the four stages in the development and life of the people of Tenganan. Each stage is also marked by a change, both biologically and socially.

In every process in the cradle rite, the stamping of a male's foot that moves the cradle is the symbol of the process of the passage in each stage. Every stamping of the male's foot represents strength and social capital to enter further stages faced by a Tenganese. In general, such philosophy also signifies that the Tenganese is taught to always understand that human life experiences the ups and downs. The position of a woman in the cradle plays an important role since in addition to having the same position as the man; she also is also regarded as the major source of life as the one who gives births to the next generation.

Every member of the community of Tenganan is officially accepted to have passed a stage and in the process of arriving at the next stage if he or she has done a particular customary rite. The following part describes the four stages of development as the rotation of a cradle in the life of a Tenganese.

1. Birth

Birth is the first stage in life. Birth is the beginning stage and is situated at the bottom of the cradle. There is a particular rite that marks this stage, namely the offering to *Kanda Empat. Kanda Empat* is believed to follow the birth of a child. *Kanda Empat* consists of blood, amniotic fluid, fetal membrane, and placenta. Spiritually, *Kanda Empat* is believed to play an important role in the stages of the child's further development. Thus, during a period of some weeks, they are offered food such as bananas, rice, coconut sugar, and beans. The rite for *Kanda Empat* for the first time is led by *Balian luh* or *Balian muani* (female or male traditional medical practitioner). Meanwhile, the offerings on the next days are offered by the family. In the period of about 42 days,

the mother of the baby experiences *sebel/ leteh* (the period in which the woman is dirty) as the consequence she is not allowed to participate in a customary activity and to visit a sacred place in the village of Tenganan. In this period, the mother has the obligation to accompany her baby and serves all its needs.

2. Adolescence

The adolescent stage is situated at the left of the cradle. The adolescence is marked by the puberty experience. Then the boy is called *truna* while the girl *daha*. *Truna* and *daha* are the second stages in the development of a Tenganese. In addition to the maturity of the function of the genital (puberty), the status as *truna* and *daha* is obtained through a series of social readiness and customary rites. The attempt at making the child ready as *truna* and *daha* are likened to entering "Tenganan Academy". This process is important since a *truna* or a *daha* has had an obligation in a series of rites.

3. Adulthood

The stage after adolescence is the stage of becoming an adult. In the cradle, this stage is represented by the top of the cradle, 180% from the birth stage. If the birth stage is the beginning period, the adult period is the top of all activities. The adult stage in the community of Tenganan is marked by marriage. The couples who have been solemnized in a marriage directly become customary members of Tenganan. Thus, the process of marriage marks the adult stage and at the same times the door to the customary member status. The adult stage is also called an active stage for the Tenganese since in this stage the customary activity is participated actively by the married couple.

4. Senile Stage

The senile stage is represented by the right side of the cradle of life. In this period, the married couples do not have the status anymore as the active members in the Tenganan custom. The active member status can terminate if the children of the couple have married. Thus, the child couples replace the status of their parents. The old couples (the parents) who are no longer active in the custom are called *krama gumi pulangan*. In this stage, a member of Tenganan community focuses more attention to household activities, taking care of their grandchildren, participating in their pastime activities, or helping with the cultivation of land.

Based on the concept of a cradle of life, the 90^0 range that starts from the point of birth and ends at the adolescence is called the childhood or "*nak alit*". The childhood is not defined as a rigid stage, as other stages that are represented as four stopping points in the cradle of life. This is due to the fact that the communities of Tenganan believe that childhood is a process. Calling some people children represents a process that is given to the people that are in the stage of development. Childhood in the context of Tenganan culture is a period that continues from birth to puberty. In terms of an age range, childhood in Tenganan is in the range of ages 0 – 11/12. In the context of Tenganan culture, puberty becomes a marker of the end of childhood. The rule in Tenganan custom stipulates that when a person has undergone puberty, he or she is called *truna* or *daha.* Truna is a designation for a young boy and *daha* for a young girl.

In the Tenganan culture, the period after birth up to puberty or what is called childhood is divided into two. The two divisions are called "*cerik*" and "*rare.*" A child in Tenganan is called *cerik* when he or she is in the range of 0 – 1/1.5 years of age. A child in this period is treated exclusively that he or she has got no chance to go out from the house and socialize in the environment outside the house. It is believed that the child is in a risky situation to experience negative things that are related to the mystic. People with bad intention regard a child as a weak person who is unable to refuse mystical treatments. When a child is ill, the family and the neighbors automatically think that the illness is caused by a mystical treatment of bad people. The family will immediately call a village traditional medical practitioner to cure the illness besides taking the child to the village community health center. The period of *cerik* category ends with the performing of *magetep jambot* rite. *Magetep jambot* is a ritual of cutting hair for the first time and is performed when a child is minimally one year old. If a child is one year old, and at that time is a *dewasa ayu* (a good day) to perform a rite, then the rite of *magetep jambot* can be performed. However, if a *dewasa ayu* has not come yet, the performance of the rite will be postponed up to the time when a *dewasa ayu* comes. The rite is a symbol of the end of the *cerik* period for a child in Tenganan, at the same time, as the door to enter the next stage of development, namely *rare* period.

Rare is the child development at the age of 1.5 to the time of puberty (11-12 years old). This stage of development gives the child a task to start to open relations with people outside the core family. The parents believe that the child has reached a safe phase to go outside of the house to interact with other people in the environment, but the parents still accompany and watch the child. The child is provided with "*bekel*" (talisman) to protect him or her from negative things. The child who has been at this age is sent to a preschool. The parents will join the interactions with the child in the classroom during the playtime. When the child enters elementary school, the parents give the chance to the child to go to school alone. The priority is given to the child to remain in the village environment during the play activities and once in a while he or she is brought to the place outside the village to play under the parent's full supervision. The school age children also get the chance to interact with the young people in the customary village (*truna* and *daha*). The school age children are involved in a series of activities to prepare them to become *truna* and *daha* to enter "The Academy of Tenganan." This involvement is aimed at the first orientation of the children to the customary obligations later when they become adolescents.

Children have some unique position in Tenganan

communities. Children play a role and have a value as the agent to preserve culture and tradition in the customary village of Tenganan. The value to be maintained and the purity of lineage inspire the daily experience in parenting. The parents actively meet the needs and want of the child. The parents try their best to help the child from the time child eats to the time the child takes a bath. The parents tend to tolerate the child's misbehaviors with the hope that the child will have no intention to leave the village later. The tendency to practice a permissive parenting is aimed at making the child stay in a comfort zone and wants to stay in the customary village family environment.

On the other hand, authoritarian parenting is also practiced by the parents in Tenganan and is aimed at making the child obedient to the rule of the customary village. The parents directly give advice to the child in order that when the child has become an adult, he or she will actively do his or her customary obligations. The child's freedom is restricted so that he or she cannot interact or play outside of the customary village environment to reduce the effect of socializing outside the customary village. The recess and the play time are respectively done simultaneously by the Tenganan people. At noon the child has to take a rest at home and when the sun has gone down, he or she is given a chance to play around the house. At the time of social preparation for "Academy of Tenganan", the children will be picked by the prospective *truna* and *daha* to participate in the activities. In the activities, the children will be groomed beautifully by the prospective *truna* and *daha* to please them and make them want to be involved in the activities.

Women and men are equal in the customary village of Tenganan Pegringsingan. This is due to the fact that the customary community adheres to a bilateral family system. Sons and daughters have the same status. This is apparent in the presence of *sangkepan desa luh* (women's meeting) and *sekeha daha* (women's organization). Other women in Bali, in general, do not have these since according to the Balinese customary law, a heir is a son, a step son and a daughter who has changed her status into a son because of the parents do not have a son as long as she does not lose her right as the heir.

The existence of the equal position between women and men makes the absence of different dimensions of parenting role applied by both of them in their family. This study is supported by Fagan, et.al. which states that the role of parenting applied by both mother and father can be studied using the same dimensions [14]. Based on these statement, it can be understood that the parenting practices are equal for sons and daughters.

In Tenganan Pegringsingan, mother dominates the parenting of a daughter. Mother is not only regarded as mother in the family but also as a senior who will teach skill and bequeath the customary obligations to the daughter. The same is true with father. Father besides being a father, also functions the teacher and caregiver of the son. Based on Lamb, et.al., mothers and father behave differently in interaction with their children [15]. Mother with maternal-child interaction dominated by caretaking. In other side, father-child interaction characterized by play and other physical activities. Although there is a clear division in relation to the teaching of skill and customary obligations between a father and a mother, it does not mean each of them forget their tasks to educate children who have a different gender from them. Interpersonal communication that occurs in the core family has an important role in keeping the relations between the father and the mother. The interpersonal communication in the core family also has the role as the means to introduce and teach customary obligations that will be done by the children later. Of course, all of these are done to maintain the culture and tradition of Tenganan Pegringsingan in their community.

The parenting practice obviously gives an impact to the child's social and emotional development in the customary village of Tenganan Pegringsingan. The child's ability to explore the new environment seems low. This is shown by the tendency of the children to be less expressive and open when interacting with a person who they have just known. The children also seem to be less initiative and show a fright behavior and a hesitation when interacting with a person who they have just known. The children seem to be very dependent on their parents so that are less independent in taking care of their bodies.

The condition of the children can be understood as the impact of parenting. It should be recalled that parenting behavior is a transfer from parenting experiences received by parents, which are then re-applied to their children [16]. Thus, in nurturing the reflected social values are adopted by the parents of the environment. It also includes the concept of the world as well as habits in behaving in the face of a problem.

In retrospect, the village of Tenganan Pegringsingan geographically describes the existence of 'natural fortress', which seems to block public access to the village. Spatially, the location of Tenganan Pegringsingan Village implies the provision of boundaries between villagers and others. Peoples with these characteristics tend to reinforce social values of self-limitation in interactions with others. Children will tend to be educated to accept and survive. Other local values that characterize the child's development in care are the emphasis on the concept of 'purity of blood and offspring'. Parenting to maintain blood purity is created and reinforced in daily practice in society. One of them looks at parents' efforts in making decisions for their children. In the social development of emotions, children will tend to be very submissive, less initiative, feel less capable in competition, and more dependent on their parents

IV. CONCLUSION AND SUGGESTIONS

There is a crisis in each stage of life for every member of

the customary village of Tenganan Pegringsingan. The strength and social capital are needed by every individual to enter the next stages. The Tenganan people are taught to always understand that human life undergoes ups and downs. Childhood in Tenganan Pegringsingan culture consists of two stages of development which are called *cerik* and *rare*. Each has a unique developmental phase and influences the parenting practice experience. The value to maintain the purity of lineage status which kindles everyday parenting experience. However, there are disadvantages of the parenting model in which the impact on the high dependence of the child on the parent and the sense of inadequacy in competing. As a follow-up, we can examine the optimization of other resources in care to reduce these negative impacts on children.

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