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Development of Model Blended Learning in Cooperative Learning for Technology and Engineering Skills in Vocational Education

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Abstract--- *Increasing the interest and willingness of students to learn a material was determined from the behavior of students in used information communication technology. The learning model developed was a cooperative learning model based on Blended Learning. Utilization of information technology, by not leaving the pattern of direct guidance from instructors and the used of learning resources to improve literacy mastery of abilities in technology and engineering became important. The Research and Development (R&D) procedure used Blended learning cooperative learning model design in the form of online and face-to-face learning for ICT literacy subjects and learning media in the experimental and control classes. Blended Learning based cooperative learning models were carried out with scenarios namely offering participation in the experimental class, forming learning groups, and learning activities (lecturers, group tutor teams, students, evaluations).The purpose of this research is to get the quality of learning activities. In stage I, students were offered to take the experimental class and the Control class. The study was conducted by 16 students be taken for experimental classes and 21 be taken for control classes. Based on the results of the study showed that the level of mastery of literacy of ICT and media (n-gain) learning in the experimental class was higher than the control class.*

Keywords--- *Blended Learning, Cooperative Learning, Technology and Engineering.*

I. INTRODUCTION

1.1. Background

Increased interest and willingness of students to learn a material is determined from the behavior of students in using information communication technology. The learning model that suits these conditions, where communication and information technology develop very quickly is a cooperative learning model based on Blended Learning. Even though the progress that has been made was still on its way, from now on it can be expected that there will be various changes in the field and other related fields of life. The implication of this state of affairs was the results indicate that relatively high levels of cultural change and high levels of institutional resources are required to implement and to operate technology-mediated learning programs, and that few objective assessments of the

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performance of these programs are initially undertaken.(Alavi & Gallupe, 2003).The changes that will and are happening are caused by the potential of information and communication technology capabilities that enable people to interact and meet their almost unlimited needs for information. Conventional learning was no longer entirely a mainstay, but in the midst of technological advancements now is needed a variety of methods that provide more opportunities for learning by utilizing a variety of sources that are not only from manpower like teachers.(Knowles, 1975) provides the most widely accepted that is: (1) Learning objectives – To develop an understanding of the theory and practical implications of teacher-directed learning and self-directed learning, (2) Learning resources and strategies – Inquiry projects 1, 2, & 3. Read Brown, Eble, Houle and Tough. Learning resource A, (3) Evidence of accomplishment – A written or oral presentation of the definitions, rationales, assumptions, and required skills of each, and (4) Criteria and means of evaluating evidence – Make presentation to a high school student, college student, teacher, and adult friend and have them rate it on a 5-point scale as to: (1) clarity, (2) comprehensiveness, and usefulness to them (Knowles M.S., 1975). The learning needed now is to utilize information technology elements, by not leaving the pattern of direct guidance from instructors and the use of wider learning resources. The concept was a combination of Blended Learning with cooperative learning. It is called as Blended in Cooperative Learning (BCL) with the design of online learning models using SQL.

The cooperative learning model known as the student center approach was an excellent cooperative learning model in improving the quality of learning. This is mainly for the level of independence and creativity of learners both towards individuals and also in groups by optimizing the use of information communication technology media in accordance with the student's characteristic behavior. The situation on some indicators still showed the phenomena, among others: (1) Students were not accustomed to finding more varied learning resources. Students only have one or two references that had been provided by the lecturer. Students were expected to have their "own initiative" to have other learning resources, both from the internet or other books that can support and enrich insights in learning; (2) At the beginning of learning activities, students who are not accustomed to using the learning media they have and set agreed learning goals between teachers and students. In this study students are offered "learning contracts" through social media Whatsup, line, email, face book and the web. So that the schedule of group learning activities that take place on the initiative by providing space and climate conducive to the creation of learning that is "democratic" and "fun". In the learning model is not oriented to the existence of teachers who are "liked" by students as in general where teachers who from beginning to end explain the material and students become passive listeners is what needs to be explored. In this research took place learner to learner, learner to technology, learner to computer is in accommodation learner to tutor, and learner to teacher.

1.2. Research Purposes

The research goal that must be achieved in this study is to find a Blended learning as learning model design to increase the independence and creativity of students. Development of cooperative learning models based on blended learning, specifically to answer behavioral problems of students in utilizing computer / gagget-based communication and information technology in improving individual abilities through group learning. At the practical level, the results of this study will be expected to be applied to prospective teacher students in vocational schools so that they can improve their abilities to become professional teacher candidates in the fields of technology and engineering.

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There are several benefits of Blended learning research in learning, namely: (1) Increasing the level of learning interaction between learners and instructors (enhance interactivity). (2) Enabling learning interaction from anywhere and anytime (time and place flexibility). (3) Reaching students in a broad scope (*potential to reach a global audience).* (4) *easy updating of content as well as archivable capabilities).* (5) Building a Community.

II. LITERATURE REVIEW

2.1 Blended Learning

The term Blended Learning has been widely used by educational institutions especially in universities. According to blended learning has two types of learning environments, namely traditional face to face learning environments and distributed learning environments that have begun to develop along with new technologies that allow expansion to distribute communication and interaction. (Graham, 2006).Blended learning is a learning strategy that integrates traditional face-to-face learning and distance learning using online learning resources and various communication options that can be used by teachers and students. *blended learning is a mixture of the various learning strategies and delivery methods that will optimize the learning experience of the user*(Harding, Kaczynski, & Wood, 2012).It said that blended learning was a mixture of various learning strategies and delivery methods that will optimize the learning experience for its users. Distance education was currently developing, so its implementation is very important to think. The mediation of knowledge and individuals during the learning process done it There are technical media interspersed between students and this media also has ethical issues. Does everyone have access to this media and handle the problem of accessibility as a moral issue(Marty, 2014).

Blended Learning is a combination or combination of aspects of the Blended Learning approach in the form of web-based instruction, video streaming, audio, synchronous and asynchronous communication in the NGO Blended Learning system path with traditional "face-to-face" learning including teaching methods, learning theories, and pedagogical dimensions. Blended Learning is the use of internet facilities such as to send a series of solutions that can increase knowledge and skills. e-Learning generally for all learning that technology uses a variety of teaching and learning tools as telephone, audio and video recording, teleconferencing, satellite transmission, and web-based training or better known or computer-assisted instructions which are also commonly referred to as e-Learning courses on line Electronic media used are internet-based electronic media, where there are satellites, audio / video tapes, interactive TV which are personal computer devices and mobile devices in the form of gaggets, ipad and others. Teaching is delivered 'synchronously' (at the same time) or 'asynchronously' (at different times). Teaching is delivered 'synchronously' (at the same time) or 'asynchronously' (at different times).

Teaching and learning material delivered through this media has text, graphics, animation, simulation, audio and video. It must also provide facilities for 'discussion groups' with the help of professionals in their fields.The difference between traditional learning and Blended Learning is 'traditional' learning, lecturers are considered as knowledgeable people and their job is to channel knowledge to their students.. Whereas in learning 'Blended Learning' the main focus is students. Learners are independent at certain times and must be responsible for their learning. The 'Blended Learning' learning atmosphere will 'force' students to play a more active role in their learning. Students are required to make designs and search for material with their own efforts and initiativesThe

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presence of teachers in the true sense, the internet will be a complement and complement in making teacher representatives representing learning resources, and the internet as an important and effective source of information compared to other media in the world(Tung, 2001). Blended Learning can be interpreted as learning using the same method, media and audience, namely by using web-based learning. The progressive convergence of traditional face-to-face and distributed environments (Graham, 2006) could become development of blended learning as Literacy Information Computer Technology (LICT) toward Blended in Cooperative Learning as shown figure 2.1 below:

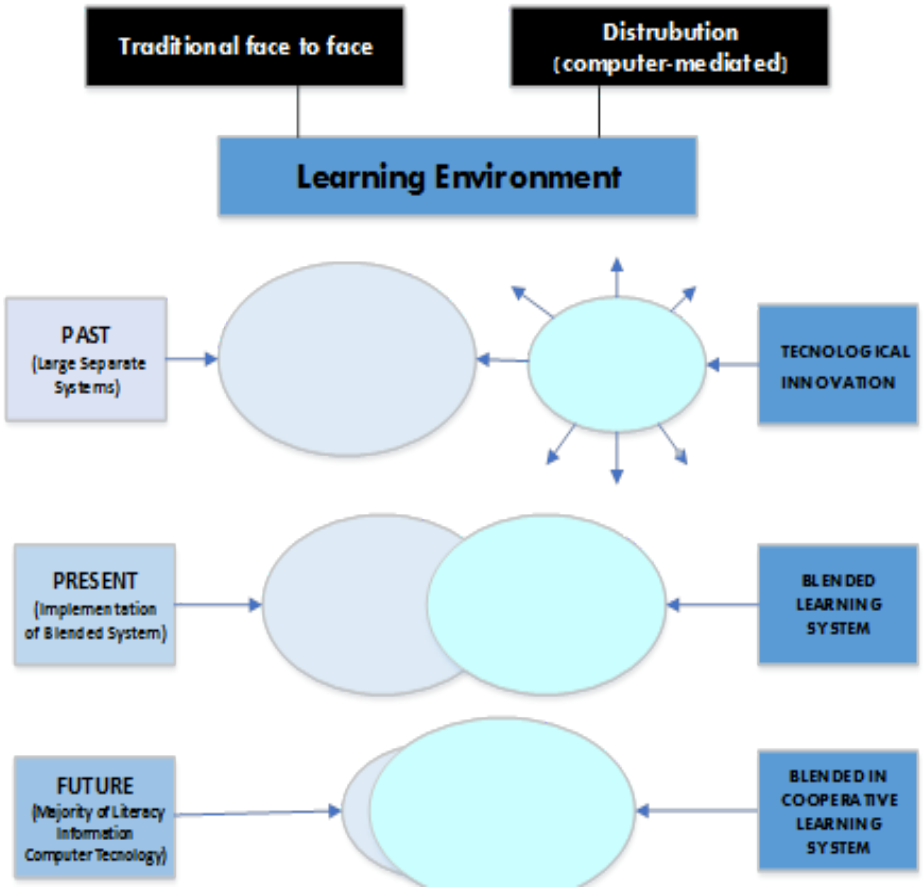

Figure 2.1: Progressive Convergen of Traditional Face to Face and distributed Environments Allowing toward Development of Blended in Cooperative Learning

Blended Learning is designed because there are times when students need face to face learning in addition to web-based learning, so students cannot choose overall learning through the internet (distance learning). Blended Learning combines aspects of e-learning including web-based instruction, streaming video, audio, synchronous and asynchronous communication or the best aspects of e-learning information technology applications, with face-to-face activities. In essence, it combines two learning approaches that are used so that it becomes a new learning approach. To be successful, blended learning must rely on solid learning theory and pedagogical strategies. In addition, there is a need for a design-based research approach to explore blending learning through successive cycles of experimentations, where the shortcomings of each cycle are identified, redesigned, and re-evaluated (Hadjerrouit, 2008).

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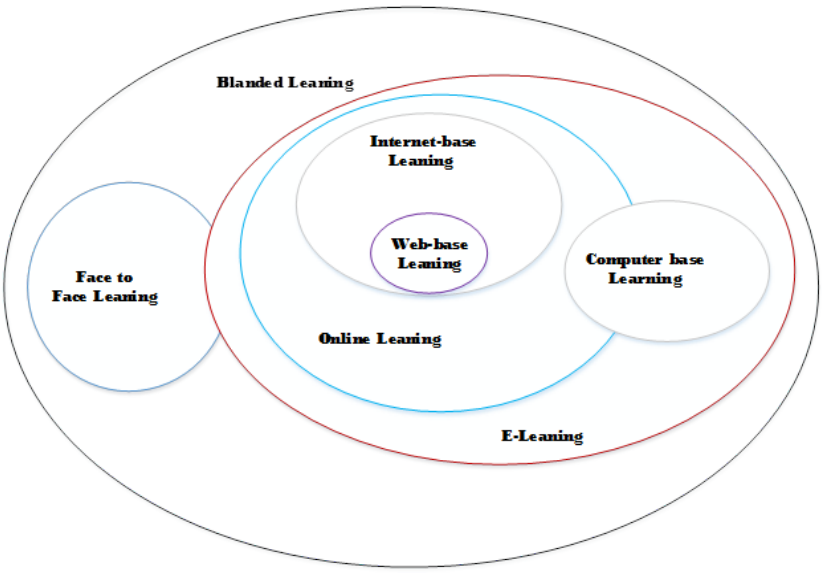

Figure 2.2: Blended e-Learning Components (Hadjerrouit, 2008)

This learning will be effective if it meets the following concepts: (1) Live Event. Synchronous instructor-led instruction in time and classroom or virtual classroom. (2) Self-Paced Learning, which combines self-paced learning that allows participants to learn to learn anytime, anywhere by using a variety of content (learning materials) specifically designed for independent learning both text-based and multimedia-based (video, animation, simulation, picture, audio, or a combination of all). (3) Collaboration, combining collaboration, both collaboration of teachers, and collaboration between learning participants, both of which can cross schools / campuses through possible communication tools such as chatrooms, discussion forums, e-mails, websites / webblogs, mobile phones. (4) Assessment. The designer must be able to formulate a combination of types of assessment both test and non-test, or tests that are more authentic (authentic assessment / portfolio) in the form of projects, products. (5) Performance Support Materials. Resources must support. Learning materials are prepared in digital form, whether the learning materials can be accessed by participants both offline (in the form of CDs, MP3s, DVDs) or online (via certain official websites).

Learning independence can be said as e-learning based learning is to develop students' independence. Learning with the support of the development of Information and Communication Technology (ICT) enables can make learning more meaningful. Through ICT students will obtain a variety of information in a broader scope and depth so as to increase their horizons. This is a stimulus that is conducive to the development of student independence, especially in terms of developing competence, creativity, self-control, consistency, and commitment to both themselves and to other parties. The process of Creativity is feeling and observing a problem, making assumptions about these deficiencies (problems), assessing and testing the assumptions or hypotheses, then changing and testing them again, and finally conveying the results of. Creativity is a unique meeting point between three psychological attributes, namely intelligence, cognitive style, and personality / motivation. Creativity or creative talent could be measured directly and indirectly, and can use test and non-test methods (Torrance, 1988).

Individual learning in this theory is an active participant, then can build their own knowledge, subjectively,

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dynamically and developing. Then process and understand information, so students have their own learning. Students are able to build their knowledge based on knowledge from the experiences they have experienced themselves. The next learning theory that underlies the Blended Learning model is cognitive learning theory. The cognitive approach emphasizes charts as an organized structure of knowledge.(Bruner, 1991)

At present almost all distance learning programs in America, Australia and Europe could also be accessed via the Internet. Studies conducted by the United States, strongly support the development of Blended Learning, states that computer based learning was very effective, allows 30% better, 40% shorter time, and 30% lower cost. Merging online learning and face to face to the ESP (English for Specific Purposes) course,(Shih, 2010)provided the following conclusions: (1) Blended model learning with video-based blogs was an effective approach for students in learning English; (2) blogging helps 82% of students improve their public speaking skills, such as speech, articulation, facial expressions, attitudes and cues; (3) Students are also taught how to use computer multimedia software and blog applications through cooperative learning; (4) Students could see and improve their weaknesses and learn from the abilities of others by watching videos on blogs quickly; and (5) by implementing a blended learning model for public speaking students, students benefit in the form of self-autonomy and collaborative learning, peer feedback from videos, instructor feedback and self-reflection.

2.2 Blended in Cooperative Learning Models

In learning in vocational education in the 4.0 era there was an important change in the role, function and position of technical teachers in developing teaching materials. Cooperative as a style of teaching according to the decision of learning material will be more successful if there is a discussion between the teacher and students, and students with students in the form of group success. Blended in cooperative learning that is done remotely (Bates, 2005) said that distance education, on the other hand, is less a philosophy and more a method of education. Students can study in their own time, at the place of their choice (home, work or learning centre), and without face-to-face contact with a teacher. Technology is a critical element of distance education. Theory of Mind (ToM) is an individual's ability to understand the cognitive states of others, including their desires, beliefs, and knowledge(Ralph, Code, & Petrina, 2019).Theory of Mind (ToM) is the ability of individuals to understand the cognitive state of others, including their desires, beliefs, and knowledge in 4 year old research.(Ralph et al., 2019). This can be a pedogogical foundation in the development of blended in cooperative learning as a system of training ToM for students' age in developing competency skills.

The success of the group was joint success carried out by group members, because the success of the group will become the culmination of the success of members who are well aware of their respective tasks and roles in a learning process. Learning models known as critical-constructive didactics, Klafki defines a world of key problems ('Schlüssel probleme')which students must be competent enough to understand and willing enough to communicate with others if they want to realize 'general education' ('Allgemeinbildung')(Meyer & Rakhkochkine, 2018). Development of Blended learning models that are integrated with Cooperative Learning so that it could becomes Blended in Cooperative Learning (BCL) to developed in the form of a web in the form of learning models, Figure 2.3 below:

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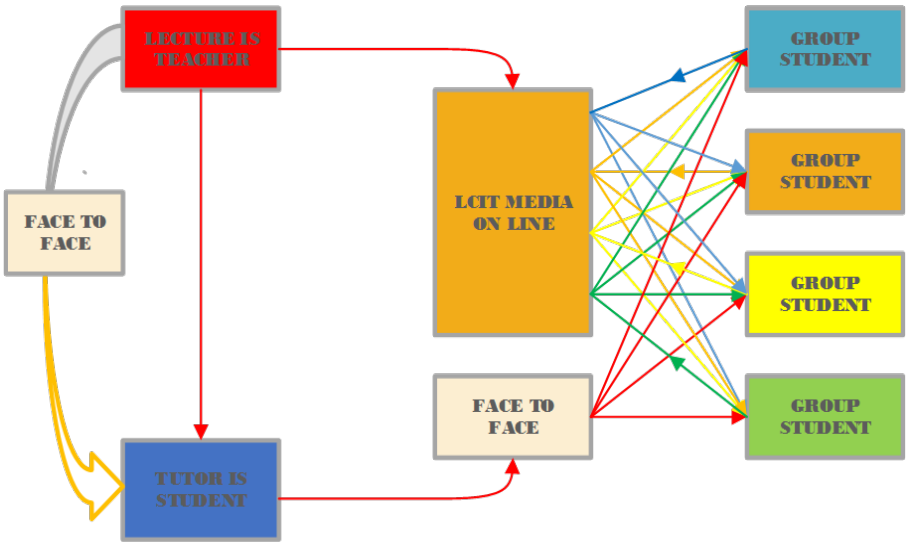

Figure 2.3: Blended in Cooperative Learning Models

The characteristics of the learning model in Figure 2.3 is the development of behavior developed in the internet-based learning model that is character-based from Cooperative Learning activities. In the process of learning activities emphasizing the role of members in each group member has clear tasks and functions, meaning that group members play a role as a proponent, reconciler, mobilizer, decision maker and formulation of learning material that has been discussed with the teacher and tutor to be students and facilitators in on-line learning activities line.

Development of resources / materials on the concept of Cooperative Learning students will be emphasized to understand the material or source of lessons that must be mastered based on an understanding. That is built alone or with the help of group members and tutors who become facilitators between teachers and students, where understanding can be built based on the theory of constructism. Resources / materials to be studied are shared equally for each group member, the subject matter referred to is ICT literacy-based with topics that had been decided in face-to-face activities with subject matter in accordance with basic competencies in technology and engineering / subject areas. The ability to interact in the concept of Cooperative Learning forces each group member to give / receive information, ideas and suggestions even explanations and criticisms, then there will be interaction in each group, each group member sharing teaching materials obtained from the results of internet literacy through web design designed for the learning process to the group in broadcast. The success of a group was the success of each individual member of the group. The understanding the subject matter and completing are the assignments assigned, either through the help of group members or based on the understanding that he built himself. The concept of the learning model will become expect that each group member contributes equally to the group in the form of learning outcomes, this is done because each group member tries to get the best value. With the characteristics found by Slavin that Cooperative Learning had a number of certain characteristics that distinguish it from other learning and these characteristics could be described as follows (Arends, 2012)Cooperative learning lessons can be characterized by the following features:

- Students work in teams to master learning goals.
- Teams are made up of high-, average-, and low-achieving students.

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- Whenever possible, teams include a racial, cultural, and gender mix.
- Reward systems are oriented to the group as well as the individual.

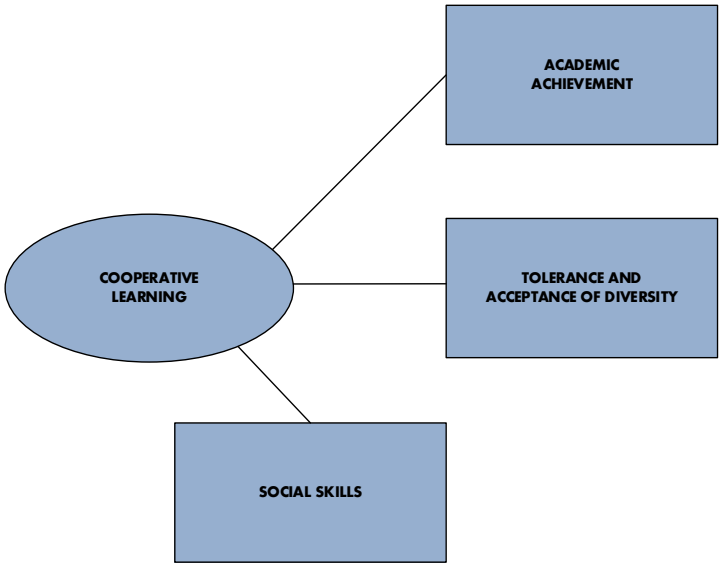

Figure 2.4: Learner Outcomes for Cooperative Learning

The type of blended in Cooperative learning model developed from (Arends, 2012) in Figure 2.4 is illustrated in the form of a chart as shown in Figure 2.5 below:

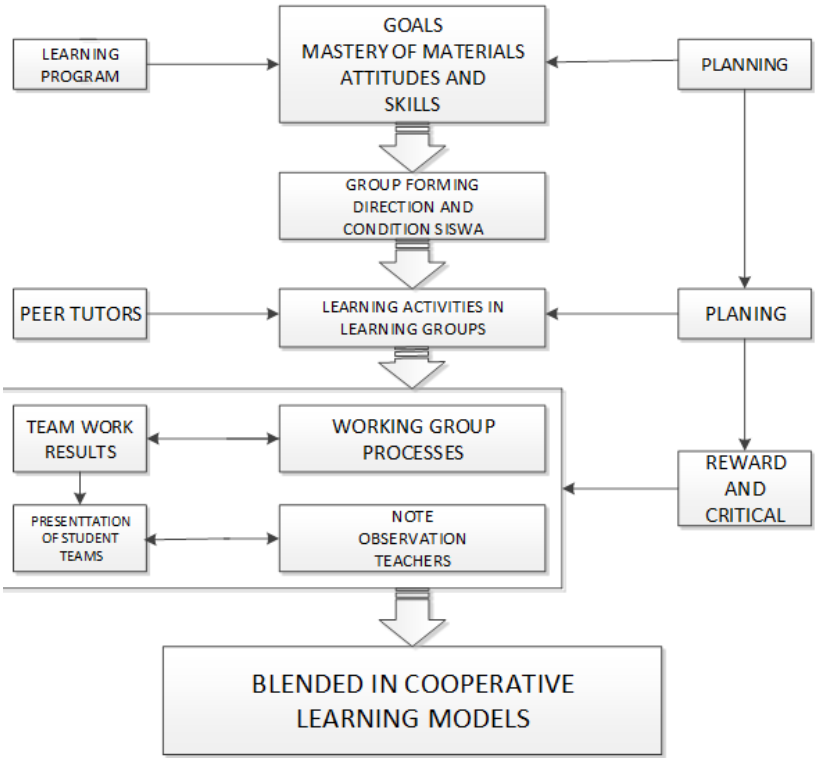

Figure 2.5: Scenario Diagram for Activities on Blended in Cooperative Learning Models

Based on Figure 2.5, learning outcomes will form a personal relationship with each group member requiring help

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from other group members, so the relationship between each group member will exchange information about the subject matter and will form a joint leadership: because each group member has the same rights to talk, give ideas, construct learning materials, formulate a decision, then the concept of Cooperative Learning will grow in leadership together. In the assessment or appreciation of the joint group with group members and group awards are given, if a group was a winner among other groups based on the value of the group given by other groups.

Based on Figure 2.5 above, before entering the core of teaching and learning activities, a teacher must design an online. Lesson plan made based on group work to be inputted online with the role of a teacher facilitator. The tutor is do input as for group work processes and the teacher's observation notes conveying it to students so Learning targets are carried out on line as shown in Figure.2.6 below:

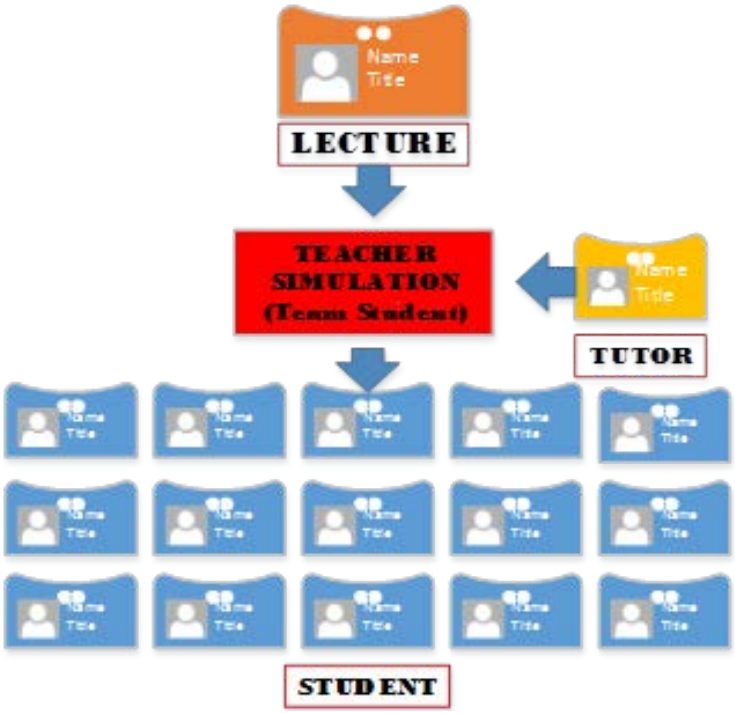

Figure 2.6: Activities of Blended On Cooperative Learning Models

https://medialiterasiict.com/

III. METHODOLOGY

3.1 Method

The research method used to produce certain products, and test the effectiveness of these products. This research was about the fundamental phenomenon of education for the 4.0 era which was conducted through basic research, which was carried out through applied research. Some applied research was deliberately directed at developing a product, some other researches are developing products accidentally, because in their research they were contain or demand product development. To find out the efficacy of distance learning models compared to face-to-face learning, demanding the development of modules or teaching materials that will be used in distance learning conducted by students who had been approved by the teacher. Making modules or teaching materials was done to

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explore ICT literacy in the era of information technology environment. Evaluative method, used to evaluate the process of testing the development of a teaching material developed by students. Products are developed through a series of trials, and every evaluation activity is held, both results evaluation and process evaluation. As for the design of online learning models used F. MySql, which according to (Welling & Thomson, 2005)MySql is a database management system that is linked and is very fast. Database, enables data storage of materials, assignments and learning outcomes to store, search, sort and receive data efficiently and effectively. The MySql server manages access to data is to ensure that many students can work well, to provide fast access and to ensure that only authorized users can access. MySql is a multi-user and multi-thread server developed in the design of online learning models. So the process or steps to develop a new product, or improve existing products, which can be accounted for. Among the many approaches to technology-enhanced learning environments, research-based design is one of the most appropriate approaches for designing and evaluating a learning mix (Barab & Squire, 2004)

Design-based research embodies specific theoretical claims about teaching and learning, and helps understand the relationship between learning theory, information technology, and educational practice. Design and research are not as isolated as in traditional instructional design and research. They are interdependent and reciproca(Wang, , F., & M.J., 2003). An important characteristic of design-based research is that it illustrates the continuous cycle, or feedback, gradual refinement of the learning model. In blended in cooperative learning design-based research is carried out in four phases. In the stages of research carried out based on research as in Figure.3.1 below:

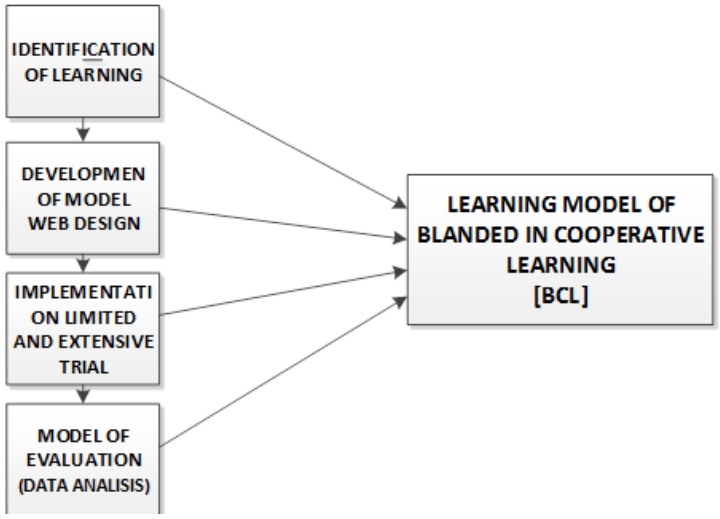

Figure 3.1: Research Diagram

1. Design-based research begins with an analysis of learning problems related to instructional media design, formulation of interesting research questions, and relevant literature reviews.
2. This continues with the design of Blended in Cooperative Learning models that will be used to solve learning problems. This model supports the work of web designers, forming study groups for evaluation and research.
3. The implementation phase is related to the application of the blended in cooperative learning model for learning technological and engineering abilities using interviews and observations

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4. The evaluation phase deals with evaluating the blended in cooperative learning model through systematic analysis of data collected from the evaluation results. Analysis, design, implementation, and evaluation are carried out through online test results. Improvements continue to be made through 4 (four) consecutive trial cycles where each cycle is identified based on different test forms: cycle 1: multiple choice, cycle 2: Essay, cycle 3: Matching, and cycle 4; True False. To explore successive blended in Cooperative Learning models in the experimental cycle, this work examines the following research questions:
    a. What are the benefits of using online media for prospective technical teacher students in applying teaching materials?
    b. What is the success in applying the blended in cooperative learning model to technological and engineering capabilities and the implications for the design of blended in cooperative learning?

The experimental class is the result of a group evaluation. While the control group is the result of an individual evaluation of all students. The total number of samples used was 21 students. The research used was pre-experimental. The sampling technique used is as in table 3.1 below:

Table 3.1: The Number of Samples

Domain	Student	Tutor	Sum of sampling	Description
Eksperiment Class	15	1	16	Coperative/Gruop
Control Class	20	1	20	Clasical/Indidual

The data processing technique used based on table 3.1 is a simulation of the results of the evaluation of differences in the value of the results of group work (Experiment Class) with the results of individual work (class control). The results of the evaluation in the experimental class on which the evaluation was given to 3 groups is the average value indicating the level of learning ability of the group of products produced by the group of students who are becoming teaching. The control class is all students evaluated.

This research is still carried out in one group not yet done for the comparison group. The choice of the experimental group and the control group is to prove whether there is a difference between group learning outcomes and individual results. Comparison of experimental results in the two groups to be able to show the level of efficacy of the products produced by students

3.2 Research Subjects

The development of the Blended in Cooperative Learning Model was carried out in the learning activities of Computer Technology Literacy and Learning Media to developed teaching materials in the Field of Technology and Engineering in the competence of the electro field based on the vocational high school curriculum. This research will be simulation a practical model for online teaching

IV. RESULTS AND FINDINGS

Blended in Cooperative Learning (BCL) design was a learning model that uses online learning media that is used for learning activities carried out by lectures, tutors, and students with online design as in Figure 4.1.

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Figure 4.1: Web Design

Figure 4.1. The learning media used MSQL software to publish to the web. Learning media https://medialiterasiict.com web browser is an application for conducting online learning activities. All material files and assignments created by group 1 uploaded by tutors were placed in a folder which is a task that must be done by another group. Education for computers includes computer literacy and training in software and hardware. The research results explain the existence of computers for education, which are controlled through a system of "supervised", "based" and "supported" can be a learning and teaching process. With the tutors taken from students who manage through a computer is the key to the success of learning activities in Blended Cooperative Learning. Using computers as teaching resources can be described as "based". And using computers as a complementary system in education can be described as "supported"(Çeliköz, Erişen, & Şahin, 2016). Design of computer position in Blended in cooperative learning (BCL) used as in Figure 4.2 follows:

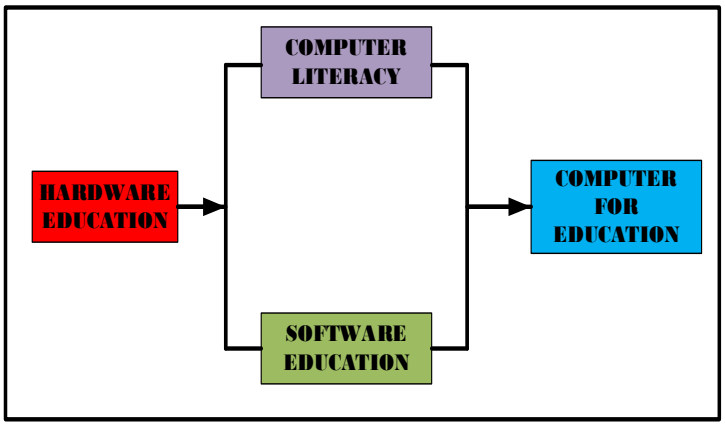

Figure 4.2: Design of education-computer Relationship

Figure 4.2 The integration of information and communication technology in this learning activity students to take part in this process. This process, for students to study computer / technology during undergraduate education before meeting with students who will be come during their services in the future. For the testing phase of the design of online learning models conducted in Literacy Computer Technology and learning media had been successfully implemented for 3 stages of learning carried out by 4 groups of students as in table 4.1 below:

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Table 4.1: Blending in Cooperative Learning (BCL) for Learning Activity Strategy Learner-Learner

Domain	Learning Activities	Learning outcomes	On line activities
Stage I: Face to Face	Formation of 4 study groups of 5 people each Discussion of Leaner to leaner	Distribution of teaching material topics	succeed
Stage II: Face to Face	Preparation of Teaching Materials Evaluation Preparation	Hand out, modules and power points	succeed
Stage III: On line	Upload material for 3 meetings	The results of the cooperative learning experimental class evaluation were 4 groups (16 people) and 21 control classes	succeed

The level of success of students in terms of carrying out learning activities as in table 4.1. it was interesting to study further, because it turns out students are certainly motivated by the Self Directed Learning (SDL) project, but it is not clear whether the SDL project motivates or requires motivation to complete it based on content analysis alone.(Boyer, Stefanie L.; Edmondson, Diane R.; Artis, Andrew B; Fleming, 2014)

4.2. Implementation of Learning

By letting students participate to determine class activities on line based on their own way to behave based on their own decisions that are carried out gradually and give students the opportunity to express, improve, and utilize their abilities as individuals who must work with students in a collaborative group environment. The results as in table 4.2 below

Table 4.2: Test Item Evaluation Results

No.	*Domain of basic competence*	*Test Item*								*Mean*	
		Eksperimen (X)				*control (Y)*					
		Multiple choice	***Essay***	***Match up***	***True and False***	***Multiple choice***	***Essay***	***Match up***	***True and False***	***(X)***	***(Y)***
1.	**Group1: Electric power source**		95	100	100	0	90	100	0	98.33	47.5
2.			95	100	100	90	90	100	100	98.33	95
3.			95	100	100	90	90	100	100	98.33	95
4.			95	100	100	90	90	100	100	98.33	95
5.			95	100	100	90	0	0	0	98.33	22.5
6.	**Group 2: Use of multimeter measuring devices**	95		100	100	60	90	100	100	98.33	87.5
7.		95		100	100	85	90	100	100	98.33	93.75
8.		95		100	100	90	80	100	100	98.33	92.5
9.		95		100	100	60	90	100	100	98.33	87.5
10.		95		100	100	90	90	100	100	98.33	95
11.	**Group 3: Use of PLC as a controller**	95	98		100	0	0	0	0	97.66	0
12.		95	98		100	60	90	100	100	97.66	87.5
13.		95	98		100	90	90	100	100	97.66	95
14.		95	98		100	35	0	0	0	97.66	8.75
15.		95	98		100	0	0	0	0	97.66	0
16.	**Group 4: Ohm's Law, Kirchoff's Laws, I and II and application**	85	90	100		60	90	100	100	91.67	87.5
17.		85	90	100		90	90	100	100	91.67	95
18.		85	90	100		60	90	100	100	91.67	87.5
19.		85	90	100		60	0	0	0	91.67	15
20.		85	90	100		45	90	100	100	91.67	83.75
	Tutor	100	100	100	100	100	100	100	100	100	100
	∑ n	1475	1515	1600	1600	985	1000	1500	1100	2029.95	1471.25
Mean (n=16)		92.19	94.69	100	100					96.66	
Mean (n=21)						64	68.57	76.2	71.4		69.61

Based on table 4.2. Improved learning out came in the experimental class the value of learning outcomes had

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been a higher gain compared to the control class that it is the results of tests conducted online for individuals by using calculations:

N Gain = (experimental class - control class)/(100-Nilai control class)

Table 4.3: NGAIN Item Test

No.	Domain	Gain N Value	Information	Inventions of standar evaluation
1.	Multiple Choice	0,78	High	obyektif
2.	Essay	0,83	Very high	refraction
3.	Match up	1	Very high	refraction
4.	True or False	1	Very high	refraction

Based on table 4.3, further offline meetings in the classroom were conducted with reflective teaching activities to accommodate student perspectives. Reflective teaching depictions as creative problem solving activities and inquiry approaches that lead to constructivism in teaching and giving priority and successfully paying attention to the feelings of other students. Thus, the teacher and students could benefit from reflective teaching. Teachers and students can think about what they want to achieve in class before practice and they try to follow up on the material needed to achieve the learning objectives. Learning will be successful, if the teacher was able to develop follow-up learning instructions that are appropriate to students' abilities(Suartini, 2019). So if the learning design wants to be positioned for activities given to students as responsibilities in the teaching-learning paradigm. This is as stated by (Henderson, 1996)that the presence of reflective preparation activities makes the teacher relieved before coming to class.

V. CONCLUSION

This research succeeded in creating a teaching program to develop students 'thinking skills whose reflection can be an example for other students, the development of teaching materials from a curriculum supported by literacy in communication and computer information technology to train students' reflective, critical and creative thinking skills, evaluations to train express the development, methods and teaching materials of diverse students and conducting trials of effectiveness through independent web facilities for other students to gain reflective thinking skills. The democratic and collaborative classroom environment carried out in this study is supported by the importance of thinking about the effectiveness of developing reflective thinking skills through computer information communication technology, obtained the existence of differences in abilities that are worked cooperatively and individually in blended on line. The average value on line cooperatively (groups) of 73 and individuals with a value of 70. With these differences prove that blended in cooperative learning can be better than the Blended in individual instruction

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