THE EFFORT FOR STUDENTS' QUALITY IMPROVEMENT USING FLIPPED-CLASSROOM METHOD THROUGH UTILIZATION OF E-LEARNING KELASE PLATFORM IN DATA COMMUNICATION COURSE

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ABSTRACT

Data communication is one of the most productive courses of informatics and computer engineering program, Faculty of Engineering University of Makasar. Therefore, students' competency for data communication need to be improve.

The purpose of this research is to enhance students' learning outcomes by using the flipped classroom method through the utilization of e-learning kelase platform. The research using classroom action research with Flipped classroom method. Flipped classroom help students to studying at home used video tutorials.

The results of study evidently prove that with applying the flipped classroom method through utilization e-learning kelase platform, students' competency or learning outcome has been improved in cognitive, affective, and psychomotoric domains. For cognitive domains, result points for cyle I and cycle II are 50

and 60, beside the maximum points are 80 and 85 for each cyle. The average point for pre-test are 65 and 74,5. Post-test points for for cycle I and cycle II are 70 and 65, beside the maximum points are 90 for both cycles. Mean points for post test are 77,16 and 79,33. For affective domains, very good category for cycle I and II are 3,3% and 30%, good category for cycle I and II are 93,3% and 53,3%, and average category are 3,3% and 16,7%. For Psychomotoric domain, result showed for cycle I and cycle II has minimum point in 55 and 65, but maximum point for cyle I is decreased from 90 to 85 in cyle II. Students' perceptions for flipped-classroom method through e-learning kelase platform are very effective, attractive, and very helpfull in self-learning process.

Keywords: *Result of Study, flipped classroom, e-learning kelase,*

INTRODUCTION

The 21st century citizens faces the rapidly technology development. The development indicates that science is growing and competition is getting higher so competency and skill are higher required to compete and survive in the 21st century. There are two kind of skills which have to gained, they were soft skill and hard skill. Those skills could acquire through teaching and learning process. Based on the National Standard, teaching and learning standard in higher education namely: 1) interactive;

2) holistic; 3) integrative; 4) scientific; 5) contextual; 6) thematic; 7) effective, and 8) students' center.

The students' competency of data communication need to be improved because student's participation in teaching and learning activities still at low level. Various factors may caused, such as: 1) the material is theoretical, 2) students' ability in analyzing is still low, 3) teaching and learning is still dominated by lecturer, 4) students can not followed the course materials, 5) there was no communication between lecture and students.

Teaching and learning process should be oriented to the needs of the graduates. Sungkowo in Suyitno (2008:1) revealed that the latest innovation trend of curriculum of science and technology are: (1) from teaching towards learning, (2) from the individualized learning towards cooperative learning, (3) from subject knowledge towards intellectual abilities, (4) from separate subjects towards integration of subjects, and (5) an integration of information communication technologies. Lutz and Jenny Chan (2015) introduce method called flipped-classroom learning, they said "*Students view the videos outside the classroom before or after coming to class where the freed time can be devoted to interactive modules such as Q&A sessions, discussions, exercises or other learning activities".* With watching video before and after class, students could have more time for discussion, Q&A, and other activities related the teaching and learning with lecture or with other students. Thus teaching and learning process is not limited in space and time.

This research using flipped classroom method through utilization e-learning kelase platform, and evidently prove that students' affective and psychomotor domains are increase during the appllying fliped classroom method into class. Therefore, flipped classroom method can be use as one of learning method which could improve the students' quality of learning.

METHOD

This research used classroom action research with DDAR (Diagnosis, design, action and observation, evaluation, relection) model. Endang (2011:71) states that research procedures of classroom action research would be more complete if it is started with problem diagnosis and followed by evaluation for further reflection. This classroom action research used two cycles with expected outcome from each cycles are below:

a) Cycle I

1. Problem Identification
   Expected outcomes from this stage is to identify problems may arise and the solution of the problems.
2. Planning
   Expected outcome from this stage is to plans solutions to overcome problems which arise in teaching and learning process.
3. Action

Expected outcome from this stage is implementation of action plan which has been created to solve teaching and learning problems.

4. Observation

   Expected outcome from this stage is students' learning outcomes which result from observation activities in the classrooms as well as assignments and quizzes.

5. Reflection

   Expected outcome from this stage is recomendation for next stage. Recomendations includes problems either has been solved or has not been solved yet as well as recomendations for further actions for next cycle.

b) Cycle II

Cycle II take stages same as cycle I, based on reflection with objective to improve students' learning outcome in data communication course.

RESEARCH ANALYSIS AND RESULTS

1. Research result for Cognitive Domain

   The result from cycle I and cycle II showed that students' learning outcome is increase for the cognitive domain. It can be seen from the average point for cycle I is 77,17 and in category B+, and for cycle II the average point is 79,19 and in category B+. The result for cognitive domain are shown in Table 1 below:

Table 1. Analysis Result for Cognitive Domain for Cycle I and Cycle II

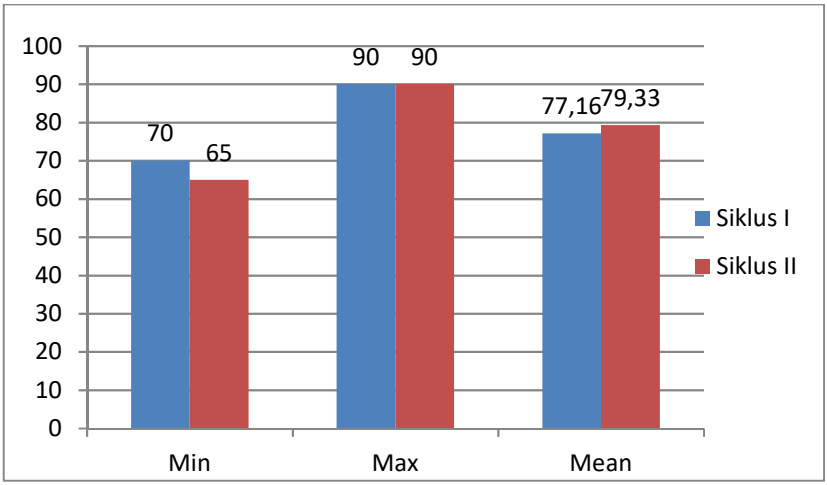
Test	Cycle I			Cycle II		
	Min	Max	Mean	Min	Max	Mean
Pre-test	50	80	65	60	85	74,5
Post-test	70	90	77,16	65	90	79,33

Source: Results of Primary Data

Pre-test result for cycle I and cycle II have minimum points 50 and 60. Maximum points for cycle I is 80 and it increased to 85 at cycle II. Average point for pre-test in cycle I is 65 and it increased to 74,5 at cycle II.

Post-test result for cycle I and cycle II have minimum points 70 and 65, post-test maximum point for cycle I and cycle II is 90. Average point for post-test at cycle II are 77,16 and 79,33. From those result, it can be conclude that with using flipped classroom method through utilization e-learning kelase platform could improved students' competency.

Minimum point, maximum and average point of post-test cycle I and II can be presented in a bar chart as shown below:



Source: Result Data Processing

Figure 1 Point Minimum, Maximum and Mean Post-test cycle I and Cycle II

Figure 1 above shows a comparison points for cycle I and cycle II. Minimum point for cycle I is higher than cycle II, they are 70 and 65. Maximum points for both cycles are same which is 90, besides average points are increase from 77,16 to 79,33. Again, conclusion for cognitive domain is with using flipped classroom method through utilization e-learning kelase platform could improve students' competency in subject of data communications.

2. Research result for Affective Domain

Table 2 Distribution Frequency of Affective Domain

category	Cycle I		Cycle II	
	Frequency	Percentage	Frequency	Percentage
Very Good	1	3,3	9	30
Good	28	93,3	16	53,3
Fair	1	3,3	5	16,7
Bad	0	0	0	0

Research result in affective domain shown that with using flipped classroom method through utilization of e-learning kelase platform, students' competency is improved. Table above describe for cycle I and II both are in very good category with 3,3

Distribution frequency table of affective domain for learning outcomes cycle I and II show the results very good category in the first cycle and the second cycle of each is 1 people or 3.3% and 9 people or 30%. For good category, cycle I gained of 28 people or 93.3 %, and 16 people or 53.3% for cyle II. For fair categories, cycle I gained 1 or 3.3%, and 5 people or 16.7% for cycle II. Those result indicated that there was an increment in very good category, but then decrease in good categories and back

to increase in fair category. Conclusion for affective domain: Using flipped classroom method through utilization of e-learning kelase platform could improve students' learning outcomes, but optimalization still needed for further learning. Below are bar chart for table 2:

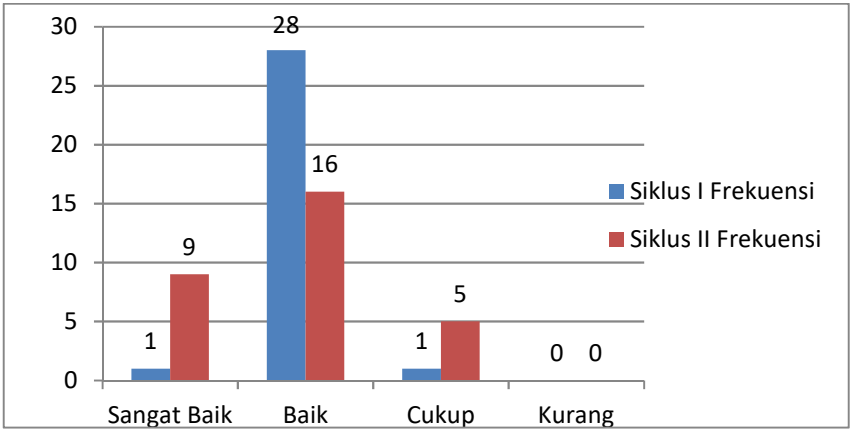


Figure 2 Distribution of frequency Learning Outcomes Domain Affective cycle I and II

Source: Result Data Processed

3. Research Results for Psychomotor Domain

Flipped classroom method for psychomotor domain proven to increased students' competency. Table below described distribution of frequency psychomotor domain for cyle I and cycle II:

Table 312 Distribution of Frequency Learning Outcomes Domain Psychomotor Cycle I and Cycle II

Cycles	Number of Responden	Min	Max	Mean	Std. Deviation
Cycle I	30	55.00	90.00	74.3333	9.07187
Cycle II	30	65.00	85.00	74.8333	6.22610

Source: Result Data Processed

Table 3 shown with using flipped classroom method through utilization of e-learning kelase platform, students' psychomotoric domain has been changed. Minimum point for cycle I and cycle II are 55 and 65, but for maximum point decreased for 90 point in cycle I become 85 in cycle II. The increment of minimum point proved that the application flipped classroom through the use of e-learning kelase could improve student learning outcomes, even though maximum value have digression , but it did not have significant results because of average value of cycle 1 and cycle class II are in the same range which are in 74.33 and 74 , 83. Conclusion from this stage is with using flipped classroom through utilization of e-learning kelase platform could improve students' learning outcomes for psychomotor domain.

CONCLUSION

Flipped classroom method through the utilization of e-learning kelase platform evidently could improve students' learning outcomes for data communication course. Perceptions of students about applying flipped classroom method through e-learning kelase platform for data communication course are highly effective and efficient. With e-learning kelase, course materials become interesting because enriched with audio video materials such as: video, PowerPoint, web link, etc, so students could understand the material easier and learning process become effective, efficient, interesting, interactively and encouraging them to explore more as well as they could learn anywhere and anytime. However, flipped classroom method through utilization of e-learning kelase platform still have some challenges such as: 1) students aspect: readiness of students to learn material before coming class still at low level therefore teaching and learning activity become less of discussion, 2) Lectures' aspect: lecture have limited time to respond the online teaching and learning activity.

SUGGESTION

For next research, applying flipped classroom method through the utilization of e-learning kelase platform requires creativities and adequate time to prepare learning resources

(videos, book reading sources). It takes creativity to create an interactive and interesting class which encourages students to think analytically, critically as well as creatively. In addition, the flipped classroom method through the utilization of e-learning kelase platform requires a considerable time to respond the online teaching and learning activity.

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Online Learning Design and Implementation

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ABSTRACT

This paper discusses the elements of instructional design, technical development, as well as implementation of flexible learning. The study was developed applying Research and Development (R & D) method by adapting the development of ADDIE model. The study stages are preceded by preliminary studies, development, and implementation. The findings of study showed that the learning method was worthy to be applied, it can be seen from the acquisition of N-Gain value 0.61 which is included in the moderate category. However, online learning experiences weakness in a number of elements, especially in the participants' independent-study skills. The number of active participants were decreasing gradually from the beginning of the course up to the end of the course. The study recommended that the frequency of direct contact between the participants to socialize with the tutor/instructor should be improved with utilizing current communication application such as; chat, web-conference, and other sharing application.
keyword: online, learning, flexible, edmodo

1. INTRODUCTION

The effective benefit of Information and Communication Technology (ICT) in learning is not limited only on running a technology. Innovation in learning is creating something interesting, engaging, thought provoking, and fun. For that reason utilization of ICT in learning process will promote innovation. One of the advantages of utilization ICT is its ability in combining learning activity to provide deepers learners' understanding of lconcepts and ideas, and gives learner new experiences and stimulates curiosity as well as motivates learning.

The implication brings consequent that teachers/educators are required to have distinguished competence in conducting learning activity aligned with science and technology development. For that reason, educators need assistance in order to operate/utilize ICT devices/tools, such as computers, internet networks, as well as various types of multimedia programs. Through professional and competent teachers as well as ICT facilities support, the learning objective able to achieve and the efforts to optimize the potential of learners will be easily realized.

Various advantages in organizing ICT-based learning using computer and internet media as follows: 1) cost efficiency: for example for teacher training program, participants no need to come to training venue, which might bring a cost for transportation, accomodation, and other facilities. 2) time flexibility: learners able to learn the material at any time, so

they able to determine their study time at their convinience. 3) space flexibility: learning activity able to be conducted anywhere, and no need well-equipped building or classroom. 4) flexibility in learning speed: every learners with different learning styles able to adjust the learning progress based on their capability. If they still find dificulties regarding the course, they are able to repeat over the materials at their own pace. 5) standardization of teachers/instructors: learning activity will have relatively equal quality, although conducted with diverse teachers/instructors.

Considering the condition above, the necessitaty of flexibility learning model expected will increase learning access regardless the inherent needs that cost learning activity, as well as to improve the worth of learning and education at the same time. The learning model is expected to be able to preview that learning not only focused on conventional learning pattern where learning conducted in classroom and at formal learning hours. The domination of teacher/educators not exist anymore, creative and inovative teachers in learning activity is a must, learners as learning subject, learning orientation to real life experience not only to books.

2. METODOLOGY

This paper constructed based on research procedures aimed to identify applicable learning model to answer the need of flexible learning model. At this point, short learning course example applied in order to support the research procedures,

especially in learning content. There are a number of different aspects of flexible learning Nikolova & Collis (1998), focus of this paper is on the important issue that is related to online learning. The research procedure conducted based on ADDIE Model concept by Dick and Carry (1996) consists of five phases or main stages, namely (A) analysis, (D) design, (D) development, (I) implementation, and (E) evaluation. The procedure performed to obtain the output of this study, which include; a set of learning design, learning materials in various media format, learning assessment, as well as the outcomes of this study is the effective study of learning model.

The data obtained in this study are quantitative and qualitative data. Quantitative data came from the result of the questionnaires, included the questionnaires for design, media, as well as learning material experts review. Qualitative data is performed since the research is also conducted through observation to obtain description the undertaken study object.

Preparation and design concept is required in order to perform beneficial model result. The five phases or stages in the ADDIE model need to be systemic and systematic through the following steps.

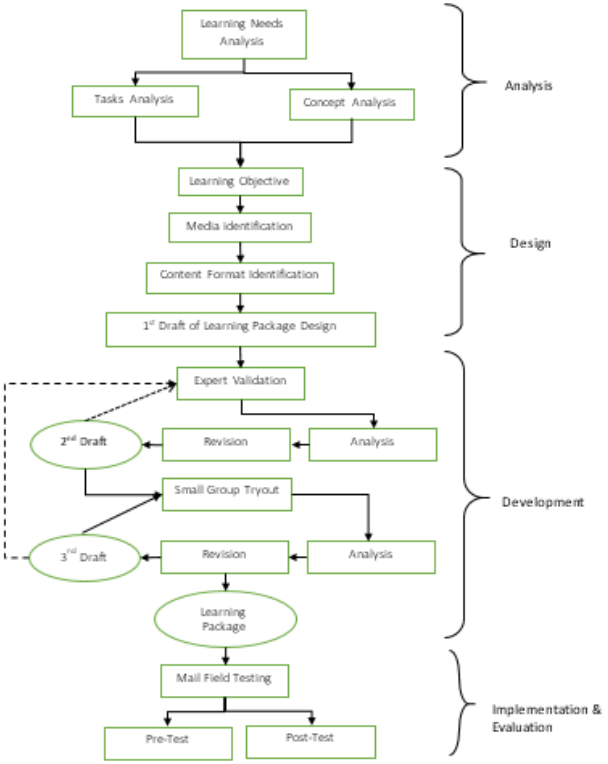

Figure 1. Research Procedures

ICT integrated flexibel learning program development consist of following activities:

1) Need analysis of flexible learning based on teacher/tutor needs, learner needs, learning material needs, as well as learning media needs.

2) Identification need of learning topic based on learning goal and learning indicators.
3) Integrated instructional model development consist of digital content equiped with audio/visual learning content, and visual simulation content.
4) Implementation of learning activities within 1 month.
5) Disemination (point 4) to broader audiences.

The identification of learning needs is conducted by field study method by reviewing the supported document and observing the learning model conducted or being conducted in SEAMOLEC. Referering to Sudjana dan Ibrahim (2001:74-75) regarding field study process "This step is not to assess the hypotesis, but to collect data regarding the determined variables, even though the collected data will imply correlation or incorrelation".

Since curriculum has an important role in learning process, teacher/tutors should have a comprehensive understanding and well-developed skills in organizing course curriculum. In this program, the course curriculum is already existing. Therefore, to align and adjust the existing course curriculum with distance learning system several activities has been conducted to obtain the curriculum composition that acceptable to delivery system. In order to have a "good" course curriculum, several procedures should be conducted. The procedures as follows.

1) Need analysis
2) Identifying competencies
3) Designing learning experiences
4) Constructing assessment
5) Developing and organizing learning object materials

With the comprehending of procedures as mentioned above, teachers/tutors are expected to transform and organize adjustment the existing curriculum into "*Distance Learning Planning"* as framework to conduct the distance learning class as well as in developing instructional material for distance learning students.

Instructional Materials offering greatly impact the success of a distance learning program. Quality in distance learning institutions and their programs are often determined with the learning material because "student learning is at the center of the ODL experience" (Kirkpatrick, 2005; Hashim, 1999). By providing high quality instructional material that meet the academic needs of learners and enhance the quality of our distance-learning program that we will grow the program and see learners successfully complete their learning goals. The instructional material development is covering the activities as follows:

1) Developing content outline based on "Distance Learning Planning".
2) Developing video script based on content outline.
3) Developing content outline for text based learning material.

4) Producing text based and visual based learning materials using suitable application.
5) Uploading material into virtual class application.

The learning content should be designed in systematic and comprehensive, the composition of the content should promote motivation in learning. Using ”stop and thinking” part in learnig material could bring teacher/tutors existing in the class. The content must also be interactive with “an element of guided didactic conversation that can create warmth, closeness and two-way communication between learner and materials or between learner and the content developer” (Holmberg, 1977).

Among the learning activities that can be obtained in distance learning material are self-check and self-exercise, i.e. self-checks included in learning material in video format during the material presentation, and self-exercise at the end of video. These are designed to make learning interesting, interactive, meaningful and collaborative. The validation and revision product performed by media and content expert. The content edited to improve the the content, flow and readability of the content without compromising on the original meaning.

Figure 2. learning material in video format

The pilot testing performed in SEAMOLEC and involving SEAMOLEC's staffs to ensure the application working as planned. This activity involved subject to review the learning activity on Edmodo accompanied by evaluator. The evaluator accompanied during the pilot-testing performed by the subject, included accessing the material, observing the subject during using the application, take note on comments, and asking to subject during and after learning activitiy.

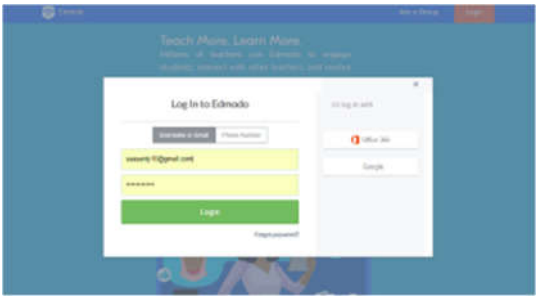

Figure 3. Virtual Class Login Page

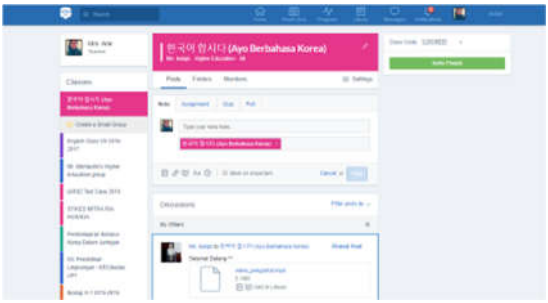

Figure 4. Virtual Class Home Page

Figure 5. Virtual Class Students' Home Page

The final development process is to implement the program with broader participants. At this stage the activity was involving learners as respondents, the implementation of flexible learning model with online mode is conductued for 1 (one) month. The flexible learning development model with the online mode that has been analyzed during the implementation stage, and the result is disseminated to the broader community that may have learning implementation challenges. In addition, through dissemination the

community will have knowledge of the trends of the learning models.

3. RESULT AND DISCUSSION

Learning model developed is a learning model that able to optimize the variety of learners, both from the variety of ages, educational background, area of origin, and academic ability. By taking samples of basic Korean language learning conducted by face-to-face mode at SEAMOLEC, the study was conducted based on the evaluation of face to face learning activities.

Field study was conducted on face-to-face learning activities conducted by SEAMOLEC. The undertaken activities in this stage included; 1) need analysis of the learners; 2) teacher requirement analysis; 3) analysis of the learning process in the face-to-face mode; 4) analysis of learning tools consisting of design, syllabus, evaluation instruments; 5) analysis of learning materials. Qualitative descriptive techniques are used to analyze data on preliminary study on needs analysis and information gathering.

The preparation of instructional design should be conducted with context analysis which includes need analysis of learners as well as learning materials. To obtain these results, gap identification conducted to compare the expected conditions with current conditions. The findings in the implementation of face-to-face learning activity were still applying conventional learning model, learning activity limited only on material lecture, discussion limited only on question and

answer. The impact was the course result can not be completed by participants. The course competences were not achieved optimally.

The focus matter also regarding the variety of participants' origins, the participants must travel to attend to the training venue and have to spend some time to stay during the training. Thus, if the face-to-face method can be transformed into online methods it will be more broadly embracing the participants because flexible access offered; admitting students without a traditional educational background or qualifications, students are allowed to determine when they enter or exit from a course allowing students to work independently, attend classes, or a combination of the two.

Once the actual development need has been identified, the development of syllabus as well as program mapping performed to provide the guideline in content development and uploading learning content into virtual class. Before the this actvity conducted, the validation process by experts especiallly distance learning expert. The next process is producing learning materials either learning materials in video format or learning materials in text format. Producing learning materials is conducted by collecting relevant material and supporting resources for learning development.

The validation review point provided by the instructional design expert on judgment aspects (Course Identity, Course Description, Standard Competency, Basic Competencies, Indicators, Learning Activities, Multimedia Components,

Assessment, Time Allocation) is 83%, the result can be categorized as "excellent". The validation review point provided by the media expert on all aspects (Ease of navigation, Display layout, Learning material) is 100% and can be categorized as "excellent" category. While the validation review point given by the material expert included all aspects (Quality of content, Integration of learning, Self-learning ability) is 84% and can be categorized as "very good" category. Assessments from the experts judgment review indicated that learning using the developed learning materials eligible as learning media in distance learning.

The implementation of flexible learning model with online mode was conducted for 1 (one) month. The flexible learning development model with the online mode has been analyzed in the implementation stage shows the average N-gain on the learning outcome of 0.61. And if the number converted into normalized Gain criteria on table 1 the increasing of learning competency of the learners can be catagorized as "Medium", this conclusion of flexible learning with online mode able to promote the increasing of learners competencies.

Table 1. Normalized gain criteria

Nilai <g>	Kriteria
$\langle g \rangle \geq 0,7$	Tinggi
$0,7 > \langle g \rangle \geq 0,3$	Sedang
$\langle g \rangle < 0,3$	Rendah

This study has several limitation, in the learning process moreover in distance learning, motivation factor is something cannot be negotiable, learner with hard motivation will be able to complete the learning objective. The findings showed that the number of active participants has gradually decreased. At the begining of the course the enrolled parcitipants was 200 participants, but unfortunetly the accomplished participants was only 10% of the active participants.

With this condition the role of teachers/tutors as facilitators should be more dominant in the provision of learning stimulus. Stimulus could came from learning materials presentation which contained interactive characteristics, this conclusion is in line with the opinion Haris Mudjiman (2009: 17) learners are given stimulus from various learning materials with an interesting method of delivery. The goal was to gain attention of learners to stay and attached with learning materials provided.

4. CONCLUSION & SUGGESTION

Distance learning have 3 concerns that are Open Access, Scalability and Quality. Open Access means anyone can participate in online courses, which are free. Scalability means the virtual learning environtment application is designed to accommodate students/participants in unlimited amounts. Also, quality assurance system for learning and the academic exercises. Despite of the major weaknesses in

distance learning are that still have low success in terms of completion and throughput rates, several recommendations to optimize the distance learning program could be considered as follows;

1) The institution should provide timely and complete information for participants on the equipment and knowledge required to use the technology employed in the program.
2) The institution should provide "help desk" services that meet the needs of participants in the program. Consideration will be given to providing timely assistance for technical problems, questions related to learning material, administration problems, and other obstacle that participants might found. While many programs will not require twenty-four hour services seven days a week, most participants will need evening and/or weekend service.
3) The institution should provide technology support through real time synchronous session service using web conference to support participants' learning process, this support could bring participant into face-to-face interaction. More direct interaction between mentor and participants could effect to participants' learning material absorption. Participants will have more personal approaches and personal assistance than system assistance.
4) The active communication through mobile messaging service to support real time consultation on learning

activity, and for other information regarding the program.

It is important to note that a very small percentage of participants who initially enroll are actually successfully completing the class.

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