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Sharing Time Learning (Face to Face and Online Learning) in Blended Learning

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Abstract— *Blended learning is a combination of learning face to face (f2f) with online learning, because it is a merger of two methods, automatically a teacher should be able to devote time to both of the learning method to increase learning outcomes. This research was conducted with the aim to (1) seek timely manner between the percentage of blended learning and face to face (f2f) in order to achieve an increase in maximum learning results and (2) look at the effectiveness of blended learning. Research method that being used is experimental method performed using 2 different percentage of instructional time. Class A and B using the percentage of time 60% online learning and 40% f2f, while class C and Dusing the percentage of time 75% online learning and 25% f2f. Conclusions of this study were (1) lecture and students agree with blended learning teaching methods and stated that this method is quite effective, (2) the composition of the time yet to get the learning outcomes as expected, but the learning outcomes of students studying with the composition 60% online and 40% f2f slightly better than students who studied the composition of the time 75% online and 25%f2f.*

Keywords— *blended learning, learning effectiveness, the percentage of instructional time*

I. INTRODUCTION

The low student results, especially in the subject of mathematics requires a real action, creative and innovative teachers so that students do not regard mathematics as a difficult subject and daunting, it is necessary for a breakthrough in learning system so that learning outcomes can be improved. The use of internet media to support the learning process (online learning) is currently regarded as the most effective and efficient in achieving the goal of educational equity and improved learning outcomes. However, from the results of previous studies found a problem that student learning outcomes are not improved significantly (learning outcomes remain low), when the students use learning strategies through online learning. Some research on the subject and the size of different classes have been conducted, and showed no significant difference between the learning outcomes with satisfaction subjects were studying with learning strategies online and conventional learning strategies (Bolliger & Martindale, 2008; Redding & Rotzien, 2008), This problem arises because in online learning, students do not have the opportunity to inquire further to the teachers, and a low student motivation to learn independently. It needs to design a learning strategy that is effective and efficient, but can improve student learning outcomes, which in addition to the students to learn by themselves student's canal so ask questions and discuss with someone

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who does know that the teaching material. Strategies were deemed able to solve the problem is a strategy that combines learning strategies f2f with online learning strategies that blended learning strategy. Learning strategy is considered appropriate because in addition to students can be trained for independent learning, teachers can also monitor the activity and progress of every student so that the student learning outcomes can be improved.

In order to Blended learning be successful, we need a percentage of time that divides the percentage of online learning and f2f learning appropriately. It is very necessary because percentage of online learning is too large will cause the student to ask questions and discuss difficulties, resulting in decreased motivation to learn. Vice versa, if the percentage of learning f2f given too much will cause the students have dependence on teachers, thus making the students cannot learn independently. Percentage distribution of time is necessary in order that the activity and motivation to learn can be maintained so as to improve learning outcomes.

Courses, student characteristics, and prior knowledge are some of the important factors in the learning process that can affect the division of time in blended learning. As noted McGinnis (2005) that the allocation of time in blended learning there is no standard, therefore the education provider can create a 'test 'themselves, in order to obtain the allocation of the right time and the ideal that is expected to assist teachers in implementing the blended learning especially in Mathematics subjects. Problems composition blended learning in the learning time is a problem that to this day has not received a definite answer, causing some researchers still continue to conduct research on the distribution of instructional time in blended learning.

McGinnis (2005) suggests six one things to note in the learning strategies blended learning (1) the delivery of instructional materials and delivery of messages (such as announcements related to policies or regulations) consistently, (2) the implementation of learning through a blended learning strategy must be implemented seriously, because this will encourage adjust to the system of distance education, so that more students to quickly self, (3) teaching materials provided must always be improved (updated), (4) the allocation of time can be started with the original formula of 75: 25 in the sense that 75% of time spent on-line and 25% of time spent on it f2f (tutorial), because the allocation of time, there is no standard that education providers can create a 'test' themselves, in order to obtain the allocation of an ideal time, (5) the time allocation tutorial by 25% for tutorial, can be used specifically for those who fall behind, but when it is not possible (for example, most of the students want into face to face), then the available time by 25% can be used to resolve the difficulties pupils in understand the contents of teaching materials. So it kind of organizing 'remedial class', (6) in a blended learning strategy is necessary leadership has time and attention to continue to work how to improve the quality of learning.

Allen, at all(2007)stated that the definition of a non-line program or blended program is similar to the definition used for courses; an online program is one where at least 80 percent of the program content is delivered online and a blended program is one where between 30 and 79 percent of the program content is delivered online. Institutions have a number of options in how they can choose to structure a blended

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program.

In addition to improving learning outcomes, learning blended learning must also be measurable effectiveness. Azis (2013) conducted a study of a number of students and the result that blended learning strategy and initial knowledge has a real impact on the effectiveness and results of student learning in the subject of Mathematics.

II. METHOD

Overall, the study is divided into two stages, where each stage is done within one year. The research methods were used: (1) research and development (2) experimental study to measure the effectiveness of learning and finding the percentage of time between online and f2f. The experiment was conducted on students and lecturer of Mathematical Economics at STIEE kuit as Bandung-Indonesia. Students involved as research subjects were 100 people, divided into 4 classes. Research method done by qualitative and quantitative. Qualitative methods used by giving questionnaires to faculty and students to find out their opinions on the effectiveness of the blended learning. Quantitative methods are used by way of comparing the results of the pretest and posttest than 2 percent when tested using t-test and F-test. In this experimental research the procedures conducted are as follows,

a) Conduct a preliminary study.
b) Conduct tests prior knowledge about a linear function of the entire population consisting of 83 students, the essays used are tests prior knowledge that has been developed by researchers.
c) Determine four classes that got the subjects of mathematical economics, which is then divided into experimental class and control class. Classroom learning experiment used blended learning instructional strategies with a composition of 60% online and 40% f2f. While classroom learning control using blended learning strategy with a composition of7 5% online and 25% f2f.
d) Perform the pretest to both classes with the aim to determine the extent of the knowledge and abilities of students on the subject to be studied as a treatment or experiment. Essay used is the pretest was compiled based on Linear Functions subject matter that will be experimented. These assays have previously been tested in order to know the content validity and reliability.
e) Experimenting with how the experimental class treated blended learning strategy learning with composition of 60% online and 40% of control- treated f2f. While class of blended learning strategy with composition of a 75% online and 25%f2f
f) Doing post-test to all classes used assays used on the pretest. Pretest and posttest results are collected and analyzed to look for interactions and differences.

Analyze and describe the differences in student learning gains as a result of the composition of the different learning time. The application of the percentage of instructional time 60% online and 40% f2f

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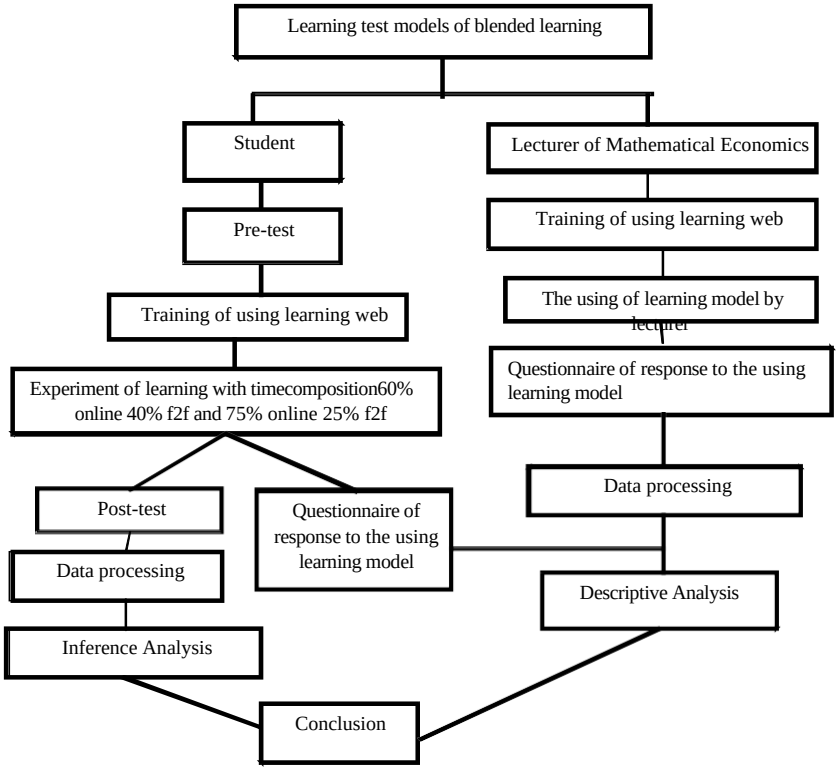
conducted on students in class A and B, while the percentage of instructional time 75% online and 25% f2f conducted on student class C and D. Of the four experimental classes were acquired data is a value pretest and posttest which would then be tabulated and analyzed using SPSS.

a) Besides finding the percentage of instructional time, this research is also conducted to measure the learning effectiveness of blended learning. Effectiveness measurement is done by giving questionnaires to faculty and students, where in the questionnaire there are five indicators, namely,
b) Ease to navigate, the criteria is increasingly easy to access, the better the learning process.
c) Content/substance the criteria getting closer to material learning objectives, the better the learning process.
d) Layout / format/ appearance the better the presentation of teaching material criteria is getting better.
e) Interest the criteria is when the learning package presented capable of causing the student interested in continue to learn is better.



Applicability the criteria more easily practiced is getting better. The procedure of the research is as follows,

Figure 1: The procedure of the research

III. RESULTS AND DISCUSSION

Learning Effectiveness of Blended Learning Questionnaire Results

After the try out study was carried out blended learning, students and lecturer to provide feedback

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on the implementation of the learning process. The response of students and lecturer consists of 14 items statement, feedback ratings given by 100 students and 2 lecturers. To facilitate the calculation and inference making any statement answers were scored. The results of the responses of students and faculty are as follows,

Table 1. The learning effectiveness of blended learning questionnaire results

Item	Score Value	Maximum Score		Minimum Score
Ease to Navigate				
P.1	272		400	100
P.2	217		400	100
P.3	219		400	100
P.4	235		400	100
P.5	243		400	100
Total	1186			
		Content/Substance		
P.6	336		400	100
P.7	324		400	100
P.8	267		400	100
Total	927			
		Layout/Format/Appearance		
P.9	236		400	100
P.10	327		400	100
Total	563			
		Interest		
P.11	227		400	100
P.12	284		400	100
Total	511			
		Applicability		
P.13	281	400		100
P.14	249	400		100
	530			
Total	3717	5600		1400

Based on the total score of respondents obtained, then compiled the assessment criteria for the entire statement from the responses of students and lecturers. The determination of the criteria of respondents score is determined by calculating the value of the minimum index, maximum index value, the intervals and intervals distance as follows,

Ease to Navigate

From the answers given by the respondents of preparation prior learning and especially about the ease of accessing the website, obtained the answers that the majority of respondents still do not agree when it is said that access is easy to use. This is because during the experimental process of learning to do, students and professors often have difficulty communicating because of the slow internet. The increase in Internet bandwidth needs to be improved so that learning process of blended learning can proceed smoothly in accordance with the objectives.

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Content / Subtance

The majority of respondents agreed that the material given in learning website is in accordance with lesson plan, so that students and faculty can make the material presented as a reference for learning and teaching. Suggestions from lecturer supervisors are examples of questions still need to be propagated, with the type of questions that are more varied. Exercises should be reproduced and are not multiple choices, should answer exercises given in the description so that the students' ability can be measured clearly.

Layout/Format/Appearance

The view of the subject matter presented by the respondents is quite good, but input from faculty adviser should look more refined so that this learning can increase student interest in learning to blended learning method.

Interest

Respondents are interested in learning by blended learning method, according to the respondents learned through this method gives freedom to the students to learn independently while still got the direction and guidance of the lecturer if they have difficulties in learning.

Applicability

Respondents agreed that the material could support them as they learn other subjects such as subjects Statistics, Introduction to Economics, Accounting, and others.

Responses of Students and Lecturers to the Learning Effectiveness of Blended Learning

Lecturer and students agree with blended learning teaching methods, and claimed that this method is quite effective when applied to the learning process.

Progress Percentage of Time Composition Learning Outcomes with 60% online 40% f2f

From 100 students who underwent pretest values obtained by an average of 55.7. Post-test value at the time the majority of respondents experienced an increase, where the average increase of 100 respondents was 71.4, or in other words increase of 15.6%. This increase has not been too good for the average value obtained is still at the bare minimum in order to achieve a satisfactory value, where the value is in the range satisfactory grades 70 – 85.

Progress Percentage of Composition Time Learning Outcomes with 75% online 25% f2f

Although the ability early on when the pretest average value is almost equal to the experimental class online 60% 40% face to face, but percentage the development of the experimental class is not so big that only 5.95%. Based on brief interviews with some respondents may know the cause is the lack of

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space and time to discuss with the instructor. Internet slowness and face to face time-frequency- that will cause less lazy student to study independently.

Different test of Two pre-test average score with α=5%

Pre-test was conducted aimed to determine the level of prior knowledge of each respondent. Initial ability of all students can be seen from the average value obtained and then tested using two different test Average treatment. Class with 75% online learning25% f2f used as a sample for-1 with a sample size of 50students (n_1=50), whereas treatment classes with 60% online learning 40% f 2 f used as a sample for- 2 with a sample size of 50 students (n_2 = 50). From the two samples can be obtained pre-test values as follows. To examine the prior ability of students derived from the value pre-test, 100 students were sampled randomly drawn as many as 50 people of every class experiments and obtained the following results,

$n_1 = n_2 = 50$

z_h score is calculated and earned score z_h = 0,86

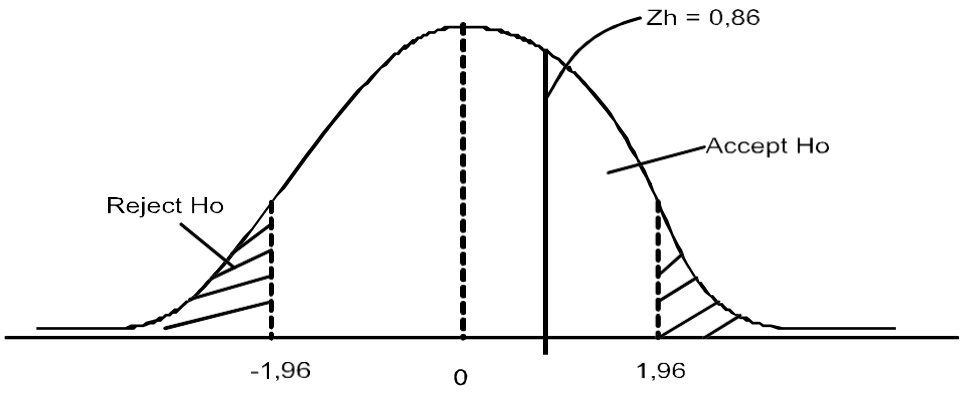

Figure 2. Normal Distribution PreTest

Based on the figure above distribution can be concluded that the ability of the start of the second class of the same.

Different test of two average Post-test score with= 5% α

After post-test and unknown prior knowledge of the sample, the next step is to conduct an experiment. Post-test implemented after the experiment is completed, by taking a sample of 50 people from each class the next step is to see differences in the results of experiments using two different test average and the results are as follows,

$n_1 = n_2 = 50$

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z_h value calculated using the formula above and the values obtained z_h = -4,16

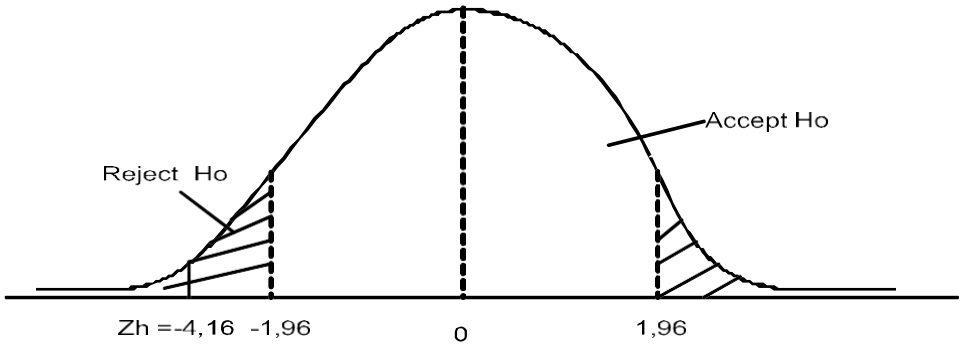

Figure 3. Normal Distribution Post Test

Based on the results of the calculation can be concluded that after experiments conducted there are different learning outcomes of both classes. Of the average value obtained is known that classroom learning with a composition of 60% online 40% f2f better than classroom learning with time composition 75% online 25% f2f.

IV. CONCLUSION

The conclusion of this study is,

1. Lecturer and students agree with blended learning teaching methods, and claimed that this method is quite effective
2. Both the time composition of learning did not get results as expected, but the learning outcomes of students studying with the composition of 60% online 40% f2f slightly better than students who study with a composition of 75% online 25%f2f

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