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The Based-Blog Learning to Increase the Student Learning Result Competency on Study Program Scholar of Machine Engineering Education of Engineering Faculty in Semarang State University

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Abstract: ***This research has aims to: (1) to determine eligibility the based-blog learning on the plan of methods, objectives, materials, and test that is conducted: (2) to increase the competence of student result on the Mechanic of Material Strength in the machine plan, and how much increasing that is occured in every learning result test. To achieve these aims necessary using the blog-based learning. The teaching materials, explanation, sample of question and test items are uploaded to the teacher's blog, continued by students who are given guidance and explanations as necessary in implementating a lecture, then given the task to download the teaching materials that have been planned by lecturers. After all can be downloaded, the students are given a test in accordance with the aim in every lesson. The result shows that: (1) model of the based-blog learning which contains the program to create a blog, the quality of the material subject of Mechanics of Material Strength (MMS), the circumstance of student, and the circumstance of the supporting environment and service to obtain an assestment from the lectures and students with the excellent criteria:(2) there is a significant difference in learning result, where students who are given based blog learning has a higher learning result than students without a blog learning with an increasing of 11%.***

Keywords: the result of the based-blog learning competency

1. Introduction

Learning media as a tool has the function to reach a goal of teaching. It is based on with a belief that teaching and learning process with a help of media can enhance the learning activities on the students in a long time. Learning activities with a media will produce the better result than if not use the learning media. Based on the daily newspaper online *Republika.com* (Didi Purwadi, 2011), the sophistication of information and communication technology makes many students to be wrong in use it. Internet network is much used to access *website* that is less educated, even Indonesia is considered the second largest accessor pornography sites in the world. It would be good if the internet is used as a learning facility. One of them is the use a blog as a learning tool in the subject of machine.

Many benefits of usage the internet to create a blog as a learning facility, such as to upload the teaching material and the lesson material that is delivered via the web and can be downloaded easily. It differs from text book which tends to be difficult to renew the material. Based on the daily newspaper online *Merdeka.com* (Fauzan Jamaludin, 2015 and Hadromi 2015), Now, the use of ICT (*Information Communications Technology)* in education, especially at the Primary School to Senior High school is still at 20 percent. It is also expressed by education observer of Paramadina *Public Policy Institute;* Totok A. Soefijanto (2015) states that, still rare learning which is done through the blog at Primary School to Secondary school. Therefore, it is necessary to develop a web as an effective learning media for subjects of machine engineering. With developing a *blog* to be filled with the downloadable teaching material, that is expected to increase the competence of student learning results.

The learning result competency is the ability that to be possessed by students after receiving the learning experience. With the good learning result will be able to accelerate in completing the study and immediately get a job in accordance with the field.

Based on the background that has been presented is necessary to make a blog learning media and to be filled with teaching materials that can be downloaded by students easily. It needs to be designed the content and explanation about how to use and exploit the blog media that has been created**.** Thus the content of teaching material in a blog can be easily learned. The preparation method of teaching material can be easily followed. It is not less important that the blog-learning method can increase the student learning results competency. From the existent various problems need to be resolved with a research that is able to prove all the problems that are presented.

This research has purposes: to determine feasibility of the blog-learning method that is conducted on the students. Also to identify the increase learning result competency in the Mechanic of Material Strength subject for students of Study Program of Machine Engineering Education in Semarang State University.

2. Research Urgency

There are many comprehentions of blog which is expressed by the experts. Susan Gunelius (2015) states *A blog (also*

called a weblog or web log) is a website consisting of entries (also called posts) Appearing in reverse chronological order with the most recent entry Appearing first (similar in format to a daily journal). It means that, a blog is a web page that consists of entries that looks in the reverse order likely a daily journal format. Blog is comprised feature of commentary and links to increase the user interactivity**.** Blog is created by using specific publishing software. Also according to Computer Glossary of Terms (2014) states that, a blog is basically a journal that is available on the internet.

Thus everyone can create a blog which can be used to provide information and communication. The created blog can be used as a learning media for providing the teaching material that has been complete and can be downloaded by all students.

The easeness to access internet, especially from blog which is created by the lecturers will make students to be creative in searching for data and communicating with lecturers and friends. Creative in communicating via blog will add essential knowledge, especially in subject of Mechanic of Material Strength. Thus the much information which accessed will be able to increase the learning result that is achieved**.** Furthermore, to know the effectiveness of blog learning media in transfering the material to the students is conducted a pre-test and filling the questionnaire before learning, and then at the end of learning is conducted the post-test of learning result. To know eligibility the based-blog learning method also needs two experts who give a validation. They are the one expert of the media field and other expert of material field of the machine learning.

According to Dale (2008: 2); "*learning is an enduring change in behavior, on the capacity to behave in a given fashion, which results from practice or other forms of experience*". Learning is a change in enduring behavior on certain capacity to behave, which is came from the practice result or other form of experience. So learning is an activity that can change the behavior either practice or experience.

From some importances necessary to be designed the based-blog learning that is easy accessed and followed by students both of the learning material and the writing method.

Framework chart of this study are as follows

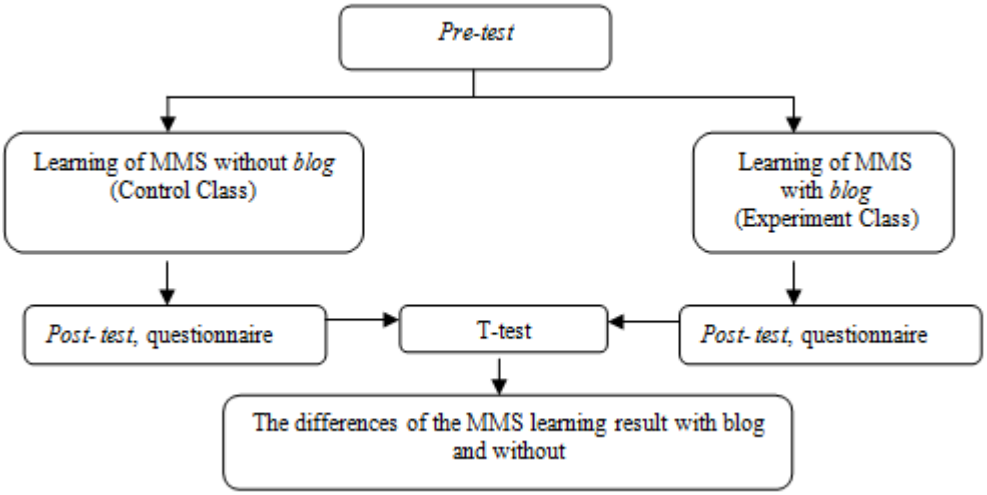

Figure 1: Framework Char

3. Research Methods

This research is a quasi-experimental design in form of nonequivalent control group design. The subject as the teaching material is the mechanic of material strength on the title of the design and calculation of the spring machine. The experiment group is given a pre-test previously to determine the beginning ability of students. After giving the pre-test, the experiment group is given treatment by using the teaching material webblog. The last step is by providing post-test to determine increasing the competence of student learning result.

This research was conducted in the machine engineering department of Semarang State University. It was in August to November 2016.

The subject in this research is a feasibility of the blog learning media that needs a validation from two lecturers and students as users. And also the competence of student result after getting the based-blog learning.

Data analysis technique in this experiment research uses *t-test* by helping of the Partial Least Square (PLS) program. The certainty of t-test results if $t_{count} < t_{table}$ with a significance level of 5%, so the zero hypothesis (Ho) is acceptable, but if $t_{count} > t_{table}$ with a significance level of 5%, then the zero hypothesis (Ho) is rejected. The certainty of *t-test* results can also be based on probability which is obtained, namely if the table sig <0.05, then the zero hypothesis (Ho) is rejected, but if the tables sig> 0.05 then the zero hypothesis (Ho) is accepted.

The steps of the research are:

- Provide a pre-test
- Open a blog that has been filled with teaching material and questions test
- Study the teaching material to the sample of questions
- Do the questions test
- Data analysis
- Conclusion

4. Results and Discussion

Evaluation of the Based-Blog Learning Media

The implementation of this based-blog learning contains of some main points that must be assessed by lecturers and students. The main points are the program to open blog, the learning material quality of the spring machine plan, the circumstance of students, and the circumstance of supporting enviroment and service. Futher, the main points are given the assessment by two lecturers and students who are subjected to learn blog that the result can be explained as follows.

Evaluation of The Based-Blog Learning Media from Lecturers.

To know the circumstance of the based-blog learning media needs a validation from lecturers of the machine subject. Two lecturers who are asked giving a validation are the lecturers of Mechanic of Material Strength and Machine Materials. The results of the questionnaire can be seen in Table 1 below.

From table 1 can be explained as follows;

The Program to Open a blog

The Assessment scores on steps to open blog between 3 and 4. The steps are to make sure the device is connected to internet (it can use wifi), open the internet with Google Chrome, search a blog of memurdani.blogspot.co.id by going to www.google.com, search the material or lecture material that will be downloaded, follow the plot of downloading of material/lecture material as written in the blog. From the result of the questionnaire which is validated by two lecturers can be stated that the program to created a blog for learning of MMS with a mean score of 3 to 4 with the excellent criteria. For more details can be seen in Table 1, and with the completed explanation.

The learning materials quality of MMS

The theme of cantilever loading and sub-theme of planning and calculation of the leaf spring is the learning material of MMS that is suitable with the curriculum on departement especially when the learning is proceeding. The quality of learning material contains of the content of teaching materials, textbooks, the used teaching methods, the decided learning objectives, evaluation, the evaluation tools that is used. From the questionnaire result which is validated by two lecturers of machine can be stated that, the program to make the learning material quality of MMS with a mean score of 3 to 4 with the good criteria. For more details can be seen in Table 1.

Table 1: Questionnaire result from lecture

No.	Statement	The provided answer score			
		D1	D2	mean	Criteria
A	**The program to open the Blog**				
1.	Make sure the device is connected to the internet (it can use the wifi)	3	4	3,5	Excellent
2	Open internet with Google Chrome	3	3	3	Good
3	Search a blog of memurdani.blogspot.co.id by going to www.google.com	4	4	4	Excellent
4	Search material or lecture material that will be downloaded.	4	3	3,5	Excellent
5	Follow the plot of downloading the material / lecture material as stated in the blog.	3	4	3,5	Excellent
B	**Learning Material Quality of MMS**				
6	The contents of teaching material proper with syllabus	3	3	3	Good
7	Textbook that is used	3	3	3	Good
8	The teaching method that is used	3	3	3	Good
9	The decided learning purposes	3	3	3	Good
10	Evaluation	3	3	3	Good
11	The evaluation tool that is used	3	3	3	Good
C	**The circumstance of Students**				
12	The students' ability to use the online communication tools	4	4	4	Excellent
13	The students' ability to access information	4	4	4	Excellent
14	The students' ability to read the contents of the information	3	3	3	Good
15	The students' ability to store information	4	4	4	Excellent
16	The students's ability to upload information	4	4	4	Excellent
17	The students' ability to communicate information	4	4	4	Excellent
D	**The Circumstance of Supporting Environment and Service**				
18	The class condition in learning	3	3	3	Good
19	The number of tables/chairs condition	3	3	3	Good
20	The number of students condition in one learning group	4	4	4	Excellent
21	The tools that is used by the student in learning	3	4	3,5	Excellent
22	The number of lecturers in learning	3	3	3	Good
23	The number of officers in serving the students	3	3	3	Good
24	The cndition of surrounding the learning classes	4	3	3,5	Excellent

The circumstance of students

The circumstance of students includes the students' ability to use the online communication tools, to access information, to read contents of information, to store information, to upload information, to communicate information. From the questionnaire result that is validated by two lecturers of machine can be stated that, the circumstance of student on learning the MMS with a mean score between 3 and 4 with the excellent criteria. For more details can be seen in Table 1.

The circumstance of supporting environment and service

The circumstance of supporting environment and service includes the class condition, the of the number of seats/tables condition, the number of students condition, a tool which is used by the students, the number of lecturers and officers in serving the students, and the condition of its surrounding. From the questionnaire resut that is validated by two lecturers of machine can be stated that, the supporting environment and service on learning of the MMS with a mean score of 3 to 4 and with the excellent criteria. For more details can be seen in Table 1.

Evaluation of Based-Blog Learning Media from students.

To know the condition of the blog-based learning model is needed a validation from students who are subjected the MMS learning. Students who asked to give their opinion are the students who follow the based-blog learning for MMS learning at that time. After all students complete the questionnaire about based-blog learning media, then the result of the questionnaire answers can be seen in Table 2.

Table 2: The questionnaire results of the Blog Learning Model from students.

No	Statement	Answer Score		
		Total	Mean	Criteria
A	**The program to open blog**			
1	Make sure the device is connected to the Internet (it can use the wifi)	146,6	3,66	Excellent
2	Open internet with Google Chrome	148	3,70	Excellent
3	Search a bolg of memurdani.blogspot.co.id by going to www.google.com	150	3,75	Excellent
4	Search material or lecture material that will be downloaded.	144,4	3,61	Excellent
5	Follow the plot of downloading material/lecture material as stated in the blog.	152	3,80	Excellent
B	**The learning material Quality of MMS**			
6	The content of teaching materials proper with the syllabus	120,4	3,01	Good
7	Text books that is used	120,8	3,02	Good
8	The used teaching methods that is used	136	3,40	Excellent
9	The decided learning objective	133,6	3,34	Good
10	Evaluation	132,8	3,32	Good
11	The evaluation tool that is used	109	3,39	Good
C	**The circumstance of students**			
12	The students' ability to use the online communication tools	160	4,00	Excellent
13	The students's ability to access the information	150,4	3,76	Excellent
14	The students' ability to read the contents of information	111,2	2,78	Good
15	The students' ability to store information	136,8	3,42	Excellent
16	The students' ability to upload information	144,8	3,62	Excellent
17	The students' ability to communicate an information	154	3,85	Excellent
D	**The circumtance of supporting enviroment and service**			
18	The class condition for learning	141,2	3,53	Excellent
19	The number of seats / tables condition	144,4	3,61	Excellent
20	The number of students condition in one class	146,8	3,67	Excellent
21	The tool that is used by the student in the learning	147,6	3,69	Excellent
22	The number of lecturers in teaching	140	3,50	Excellent
23	The number of officers in serving students	137,2	3,43	Good
24	The condition of surrounding the learning classes	132,4	3,31	Excellent

The program to open the blog

The mean score of assessment on steps to open the blog between 3.66 to 3.80. The steps are to make sure the device is connected to the internet (it can use wifi), open the internet with the Google Chrome internet, search a blog of memurdani.blogspot.co.id by going to www.google.com, search the material or lecture material that will be downloaded, follow the plot of downloading the material/lecture material which is written in the blog. From the questionnaire results which is validated by two lecturers can be stated that, the program to create a blog for MMS learning with a mean score of 3 to 4 with the excellent criteria. For more details can be seen in Table 1, and with the completed explanation. From the questionnaire result which is validated by 40 students can be stated that, the program to create a blog for learning of MMS with a mean score of 3.73 and with the excellent criteria. For more details can be seen in Table 2.

The learning Material Quality of MMS

The material learning of MMS which is proper with curriculum in departement especially when the learning was proceeding is with the theme of a cantilever loading on the subtheme of planning and calculation of leaf spring. The quality of learning material comprises the content of teaching materials, the used textbook, the used teaching method, the decided learning objectives, evaluation, the evaluation tool that is used. From the questionnaire result

which is validated by 40 students can be stated that, the program to make the learning materials quality of MMS with a mean score of 3.01 to 3.40 with the good criteria. For more details can be seen in Table 2.

The Circumstance of students

The circumstance of students includes of the students' ability to use the online communication tool, to access information, to read the content of the information, to store information, to upload information, and to communicate information. From the questionnaire result that is validated by 40 students can be stated that, the program to make the circumstance student for learning of MMS with a mean score of 2.78 to 4 with the excellent criteria. For more details can be seen in Table 2.

The circumstanse of supporting enviroment and service

The circumstance of supporting environment and service containts of the class condition, the number of seats/tables condition, the number of students condition, the tool that is used by students, the number of lecturers and officers in serving students, the condition of its surrounding. From the questionnaire results that is validated by 40 studnts can be stated that the circumstance of supporting environment includes and services for learning of MMS with a mean score of 3.31 to 3.69 with the excellent criteria. For more details can be seen in Table 2.

There are two data of learning results, namely pre-test and post test

Both of the tests are used to know differences of the learning result between the class which is studying MMS by using a blog and class which is studying MMS without using a blog. Further it is conducted twice in learning and test for the experiment class that can be used to find the maximum score of learning result.

Pre-test data of learning result of the experiment class and the control class.

To know both of classes in the similar ability, it is needed a pre *test*. The result of pre test can be seen in Table 3 below.

Table 3: Pre-test data of learning result of experiment class and control class

Class	Respondent	Score		Score	*Mean*
		Highest	Lowest		
Experiment (EC)	40	68	60	2568	64,25
Control (CC)	40	64	56	2416	60,44

From table 5 can be seen that, for the pre-test result on the experiment class (CE) with the highest score of 68, the lowest score of 60, and the mean score is 64.25. For the control class (CC) with a highest score of 64, the lowest score of 56, and the mean score of 60.44. In fact the difference of the mean score both of classes is not far different even though the mean score for the class experiment seems higher than the mean score of pre-test control classes, namely 64.25> 60.44. Thus both classes are in nearly same condition.

Post-test data of learning result of experiment class and control class.

After completing the learning, it is necessary to know the students result from both of classes. From the test result that has been done it can be seen in Table 4 below.

Table 4: The post-test result data of the experiment class and the control class

Class	Respondent	Score		Score	*Mean*
		Highest	Lowest		
Experiment (EC)	40	80	72	3144	78,65
Kontrol (CC)	40	72	68	2844	70,69

Table 6 can be seen that the post-test results of experiment class with the highest score of 80, the lowest score of 72, and the mean score is 78.65. For the control class with the highest score of 72, the lowest score of 68, and the means score is 70.69. In fact, the difference of mean score of both classes is very far and for the experiment class seems to be higher than the mean score of post-test of control class, it is 78.65> 70.69

The score of learning result competency on students who are taught using based-blog learning is higher than score of learning result competency on students who are taught without blog learning.

Score data of student results competency from two classes (EC and CC) can be seen in table 5.

Table 5: Analysis results of learning result competency of EC and CC

Test	*N*	*Mean*	*Stdev*	*T-Statistic*
EC	40	78,65	4,705	3,823
CC	40	70,69	2,523	-

The mean score of learning result competency of experiment class (EC) is 78.65 and the mean score of learning result competency of control class (CC) is 70.69. From calculation of the total effect shows that the score of T-Statistic is 3.823 higher than the score of T-table of 1, 601, it means that there is a difference in the score of learning result competency both of classes significantly. The experiment class has a score of student result competency which is higher than the class control. Thus it can be stated that score of the learning result competency of students who are taught using the based-blogs learning is higher than the score of learning result competency of students who are taught without the blog learning.

The increasing score of the student learning result competency

The Increasing of pre test and post test

Pre test of learning result of students who are subjected the blog learning with a mean of 64.25 and post test with a mean of 78.65. Thus there is an increasing in learning result of 22%.

The increasing student result is observed from the done learning**.**

The score of learning result competency of students who study with based-blog have a mean score of 78.65 and it is

higher than mean score of learning result of students who study without blog 70.69 (78.65> 70.69). The increasing is up to 11%.

5. Discussion

In this research, the learning process is supported by a media that is used the lectures as a communication tool to students. This blog learning media is expected able to strengthen memory, understanding, and skills for students about the material that is studied. In the study, every student is required to understand and examine every material that is taught. The result of this research is proper with the results of Izzudin's research (2013) entitled Efektivitas Penggunaan Media Belajar Video Interaktif untuk Meningkatkan Hasil Belajar Praktek *service engine* dan Komponen-Komponenya (The Efectiveness of Using the Interactive Video Learning Media to Improve the Practice Learning Result on Service Engine and its Components), concludes that there is a significant increasing in learning result on basic competence of service engine and the components. In this research uses two groups: the experiment group and the control group. On the control group is given learning by lecture without using a blog, while the experiment class with using a blog learning media. Based-blog learning media contains how to open a blog and its operation, so students can be easy in understanding the subject materials and accessing the material as well as providing input. The result of blog learning that is done suitable with the result of Williams & Jacobs (2014), conclude that there is a positive correlation between student performance and reflection attitude on learning. This shows that students who have better learning achievement tending to create the further reflection about their learning. With the based-blog learning students will tend to be more creative in finding the data that exists in other appropriate blog. This can make the students to be able to increase the competence of learning results. The results of research based-blog learning that has done in accord with the finding of the Laurie Armstrong and Dr. Marsha Berry's research (2007) which states that, for the development of blog in the class can be seen as a primary learning tool and provide information via online that can improve the student learning results. It shows that the development of based-blog learning in the class can increase the student learning result. Blog-based learning can be used to improve student learning result but also as a tool to improve a communication. This is proper with the results of Anne Bartlett-Bragg's research (2012) which concludes that the use of the blog e-learning can be as an aid tool to improve a communication in the educational process and support in increasing the learning result. With increasing a communication will be easier to learn the teaching material that next students will be able accept much more information. The results of research that is conducted also proper with the findings of Jo Mynard (2007) concludes that, a blog can be one of learning tool to be used encouraging the students to improve the learning result. With these findings can strengthen the results of research which expresses that blog-based learning can increase the student learning result on the machine subject.

The Advantages

This research has several advantages such as the existence of teaching material which can be given to students at any time so that it can be immediately learned. The easily open a blog makes students to be happier in opening internet that can be concurrenly used as a source of book that has been provided. In the data analysis is made two analysis of increasing the learning result competency, namely between the result of pre test with post test and post-test results of control class with post test result of experiment class, it means that the use of based-blog learning media can be expressed more preeminent than learning without blog media. If students have been already familiar to study by based-blog learning, then it is expected that students will be able to study by themselves without explanation from the lecturers so it is called learning by doing.

The limitations of the reserarch

Not all students have adequate facilities such as a laptop, internet packages for use at home so they have to bother their friends. It will also complicate the independence in the test that is done, because the question is always given on the blog. It needs an organized habit so that it can facilitate the learning program.

6. Conclusion

The research results of the based-blog learning can be concluded that: based-blog learning model that contains the program to create a blog, the subject material quality of Mechanic of Material Strength (MMS), the circumstance of students, and the circumstance of the supporting environment and service obtains assessment from the lecturers and students with the excellent criteria.

There is a significant difference in learning result competency, the students who are given based blog learning has a higher learning result competency than students who study without blog learning.

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