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Effectiveness of E-Learning for Students Vocational High School Building Engineering Program

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Abstract. Implementation of vocational learning in accordance with the 2013 curriculum must meet the criteria, one of which is learning to be consistent with advances in technology and information. Technology-based learning in vocational commonly referred to as E-Learning, online (in the network) and WBL (Web-Based Learning). Facts on the ground indicate that based learning technology and information on Vocational High School of Building Engineering is still not going well. The purpose of this research is to know: advantages and disadvantages of learning with E-Learning, conformity of learning with E-Learning with characteristics of students on Vocational High School of Building Engineering and effective learning method based on E-Learning for students on Vocational High School of Building Engineering. Research done by literature method, get the following conclusion as follow: the advantages of E-Learning is learning can be done anywhere and anytime, efficient in accessing materials and tasks, ease of communication and discussion; while the shortage is the need for additional costs for good internet access and lack of social interaction between teachers and students. E-learning is appropriate to basic knowledge competencies, and not appropriate at the level of advanced competencies and skills. Effective E-Learning Based Learning Method on Vocational High School of Building Engineering is a Blended method that is a mix between conventional method and e-learning.
1. Introduction

Education will always progress. One of the factors that influence it, is advanced in information technology. Advanced information technology requires education to be able to create learning methods. Learning methods should be more creative, innovative and effective. The goal can be reached with the help of technology. Teachers as an important element in education should also be able to keep up with technological developments to improve educational outcomes. As described in the Law of the Republic of Indonesia Number 20 of 2003 Article 2 that teachers and educational staff are obliged to create an atmosphere of meaningful education, fun, creative, dynamic and dialogical, professionally committed to improving the quality of education [1].

Indonesian Government Regulation No. 19 of 2005 explains that the process of learning in the educational unit organized in an interactive, inspiring, fun, challenging, motivating the students to actively participate and provide enough space for innovation, creativity, and independence [2]. Indonesian Government Regulation No. 70 of 2013, adding that the external challenges of education among others related to globalization and the issues related to environmental issues, advances in technology and information, the rise of the creative and cultural industries, and the development of education at the international level. Globalization will shift the lifestyle of the people of agrarian and trade traditionally been an industrial society and modern commerce [3]. Curriculum in 2013 aimed to prepare humans to Indonesian in order to have the ability to live as individuals and citizens who believe, productive, creative, innovative, and affective and able contribute to society, nation, state, and world civilization. Various methods developed to meet the creative learning process in accordance innovative advances in information technology. One is learning to e-learning. Various methods developed to meet the creative learning process in accordance innovative advances in information technology. One is learning to e-learning. Various methods developed to meet the creative learning process in accordance innovative advances in information technology. One is learning to e-learning. Various methods developed to meet the creative learning process in accordance innovative advances in information technology. One is learning to e-learning.

1.1. E-Learning

E-Learning is a learning process using media or electronic equipment aid and is expected to improve the effectiveness and efficiency of learning. E-Learning learning media can be presented in the form of offline or online media [4]. Explains that E-Learning is sending learning material through an electronic media such as the internet, intranet/extranet, satellite broadcast, audio/video, CD-ROM, and Computer Based Training (CBT) [5]. E-Learning is the use of electronic technology to send, support, and improve teaching, learning, and assessment.

The process of organizing E-Learning requires a system that is capable of managing online learning, a commonly used system known as LMS (Learning Management System) [5]. LMS can help create and offer some courses, also provide the ability to streamline lessons and can be integrated with LCMS (Learning Content Management System) in creating content.

E-Learning contains the concept of learning is not hindered time and place. At school, at home, in restaurants, in stores and in other places where there is internet access, it will be able to carry out learning with e-learning. According to E-Learning can make learning more interactive and easily accessible by teachers and students so that learning activities are fun [6]. E-Learning is appropriate for distance learning.

The difference between conventional learning with E-Learning is the conventional class of teachers as the main learning source and assigned to channel knowledge to the students. While learning e-learning main focus is the learner. Students are independent and active in their learning. The E-Learning atmosphere will require students to play a more active role in their learning. The learner makes designing and looking for material with effort, and own initiative.

1.2. Vocational High School

Government Regulation No. 19 of 2005 on National Education Standards explains that Vocational Secondary Education is an education at an intermediate level which prioritizes the development of
students abilities for certain types of work. Vocational Secondary Education must be able to produce graduates who have independence in certain occupations [2]. Law Number 20 the Year 2003 on National Education System Article 18 explains that vocational secondary education provides knowledge and skills in accordance with certain occupational areas [1]. Government Regulation No. 17 of 2010 Article 76 explains that the function of vocational education is to equip learners with scientific and technological skills and vocational skills of the professions in accordance with the needs of the community and to increase physical and mental readiness to live independently in the community and or continue education to higher education [7].

The main purpose of vocational education is to create graduates who are ready to work adds that vocational education aims to identify the types of work that are appropriate for individuals and to help develop work capacity to be more effective [8][9]. Vocational High School is synonymous with skills. Practice skills have more portion than the theory, in order to increase the skill and working readiness. Various methods and technologies learning in Vocational High School applied to achieve educational goals. Define educational technology as a tool used in formal education practices to disseminate, illustrate, communicate, or keep learners and teachers in activities purposively designed to encourage learning [10]. With the advancement of technology then one of the obligatory things that must be provided by the school is internet access. The use of internet in education will enrich the repertoire of education, with internet knowledge accessible anywhere. The use of the internet is like two sides of a currency that there must be positive and negative. One of the positive things that can be applied in education is E-Learning. The study that will be discussed is Vocational High School which has the dominant practice portion, is it effective if applied learning method with e-learning.

The formulation of the problem in this study is (1) What are the advantages and disadvantages of learning with E-Learning?; (2) Is learning with E-Learning suitable for students of Building Engineering Vocational High School; (3) How is the application of E-Learning method effective for students of Building Engineering Vocational High School?; The purpose of this research is to know: (1) advantages and disadvantages of learning with E-Learning; (2) conformity of learning with E-Learning with characteristics of students of Building Engineering Vocational High School; (3) effective learning method based on E-Learning for students of Building Engineering Vocational High School.

The type of this research is literature research. The literature research utilizes the source library to obtain research data. The literature research is a series of activities related to library data collection methods, reading and recording, and processing of research materials.

2. Result and Discussion

2.1. Advantages and Disadvantages of E-Learning
E-learning can offer a wider and unbound content of learning content [11]. E-learning is appropriate in distance learning, E-learning, efficient in discussions between students and teachers, as well as students can learn independently by downloading materials and exercises from E-Learning [12].

Utilization of e-learning is also inseparable from the various shortcomings. The weakness in the E-Learning is the lack of interaction between teachers and students or even among students themselves. This lack of interaction can decrease the learning and teaching outcomes. The use of E-Learning tends to ignore the social aspects and vice versa encourages the growth of business/commercial aspects. The learning and teaching process tends toward training rather than education. Changing the role of teachers from the original mastering conventional learning techniques, now also required to know the learning techniques that use ICT. Students who do not have high learning motivation tend to fail. Not all places are available internet facility. Lack of knowledge and internet skills and lack of mastery of computer languages.

NS Hanum (2013: 101) suggests that the factors supporting the implementation of E-Learning in Vocational High School are the readiness of human resources to improve E-Learning, software
facilities to develop learning media, internet facilities in the school environment, and the needs of the implementation of E-Learning. While the inhibiting factor of E-Learning in Vocational High School is the lack of licenses and copyrights on E-Learning, lack of motivation for teachers in developing E-Learning and there are still teachers who do not understand about course management in E-Learning, learning, limited facilities in terms of education and training to improve E-Learning skills and support to implement E-Learning, lack of commitment from schools and teachers on E-Learning development, as well as the funds needed for the implementation of E-Learning is still limited.

Any method of learning must have advantages and disadvantages, as well as learning with E-Learning. Learning methods are applied not only to one particular material but to various subjects. The number of materials and differences in characteristics of schools and students, the teacher is required to master more than one method of learning. The learning method is applied by adjusting to the school, the material, and the characteristics of the students.

2.2. E-Learning Effectiveness for Students of Vocational High School Building Engineering

N S Hanum (2013: 90) The effectiveness of E-Learning as a learning media based on the quality standard of E-Learning implementation as a whole is quite effective with a trend rate of 77.27%. This shows that the implementation of E-Learning is not fully effective for all teachers, due to several factors of its implementation that has not been optimal.

Learning aspect with E-Learning is planning aspect, designing aspect and material making, delivery aspect or delivery method of E-Learning, learning interaction aspect and evaluation aspect of E-Learning. Aspects that get the highest criteria are aspects of planning, design and material aspects. Aspects that get the lowest criteria are on aspects of learning interaction and evaluation aspects of the implementation of learning.

| No | Aspects of Learning with E-Learning | Percentage |
|----|-----------------------------------|------------|
| 1  | E-Learning planning                | 77.57%     |
| 2  | Designing and manufacturing materials | 75.14%     |
| 3  | Delivery method                    | 75%        |
| 4  | Interaction of learning            | 66.10%     |
| 5  | Evaluation of E-Learning           | 69.01%     |

Building Engineering is one of the skills programs in Vocational High School. Building Technique has several skill competencies such as building drawings, concrete stone construction, logging, steel construction, plumbing, and survey and mapping. Building techniques provide students with skills in the field of building construction by providing practice and knowledge training. The composition of practice is also more than the theory in the classroom. In the class X students, there are many theories as for the basics for doing further practice. In grade XI began to practice independently and there Prakerin (Industrial Work Practice) and in grade XII more on the application of practice results and development of applied knowledge.

E-learning as one of the methods of technology-based learning will be appropriate on Vocational High School Building techniques on the material and the initial competence of students, namely in class X. The corresponding lesson is on the subjects of basic theories such as building science, basic knowledge building materials, building structures, and theory of safety work. E-learning on practical subjects can be used by providing video tutorials as basic materials before practicing directly.
2.3. E-Learning Method that is appropriate for Vocational Students

Explains that the implementation of e-Learning system can be implemented in the form of asynchronous, synchronous, or a mixture of both. Asynchronous E-Learning is common in both simple and integrated Internet through E-Learning portals. Synchronous E-Learning is performed live through video and audio conferencing, teachers and learners must be in front of the computer. Furthermore, also known the term blended learning (hybrid learning) is a learning that combines all forms of learning such as online, live, or face to face (conventional) [5].

Learning is not only based on technology because learning is essentially more in the process of interaction between teachers, students, and learning resources. Although E-Learning can be used independently by students, the existence of teachers becomes very meaningful as adults who function to provide support and assist students in the learning process. The face to face process is important and should not be left behind in learning. Therefore, learning that combines (blending) between face to face learning with E-Learning will make the learning process becomes better. Blended learning is a combination of traditional learning characteristics and an electronic learning environment.

Students of Vocational High School Building Engineering who have characteristics such as students of Vocational High School, in general, is more like a practice than theory. To improve student's enthusiasm and motivation, then use interactive learning method, interesting, and innovative. Learning method with e-learning is one of the appropriate methods, but not biased by just one method but must be combined. Students who still have unstable thinking will find it difficult to learn independently with the internet through E-Learning, but require supervisors, controllers, and directors so that learning can take place well. So the Blended Learning method can be an appropriate alternative to overcome these shortcomings.

3. Conclusions

The conclusion is: (1) The advantages of E-Learning is learning can be done anywhere and anytime, efficient in accessing materials and tasks, ease of communication and discussion; while the shortage is the need for additional costs for good internet access, the lack of social interaction between teachers and students (2) E-Learning learning is appropriate to basic knowledge competencies, and not appropriate for advanced competency and skill levels. (3) Effective E-Learning Based Learning Method for Vocational Students Building Engineering is a mixed method (Blended) that is a mix between conventional method (face to face) and E-Learning.

Suggestions from the results of the study are (1) in the implementation of E-Learning in schools there should be socialization and adequate training for teachers and students, so that learning can be done and optimal learning outcomes, (2) E-Learning in schools must have a special manager organize the program and input material output and evaluation, so it is very helpful for teachers in managing E-Learning, (3) E-Learning must be licensed legal and acknowledged so that it can run well, in cooperation with education office and related institutions.

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