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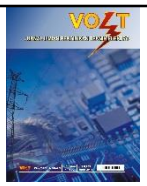

DEVELOPMENT OF WEB-BASED LEARNING MEDIA IN VOCATIONAL SECONDARY SCHOOL

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Abstrak

This research aims to develop a Web-based learning media effectively on subjects of Automotive Basic Electrical Engineering in Vocational Secondary School (SMK) Negeri 1 Lintau Buo. Web-based learning media developed measured their effectiveness, as one media choice efficient and effective learning for students This research using the method of Research and Development (R&D) with 4-D model (Define, Design, Develop, and Disseminate). The results obtained from this research are as follows: (1) the learning media validity of the web-based learning media is declared valid with value of 85.99%, and on aspects of the material declared valid with a value of 87.7%; (2) the media practicalities of web-based learning media on the teacher's response stated the practical value of 81.7%, and based on the response of the students stated the practical value of 88%; (3) the media effectiveness of the web-based learning media was declared effective in improving student learning outcomes.

Keywords: effectiveness, learning media, Web-based learning media

INTRODUCTION

A change of paradigm learning strategies from teacher-centered to student-centered encourages learners to learn independently. One of the independent learning model is to use the technology. Technology is inseparable from human life at this time, this is because the technology has affected every human life. One form of technology development is the

technology of the internet. Advances in technology have changed the style of learning of teachers and students.

Utilization technology of badly needed by teachers and students as one media lessons and learning system that is effective and efficient. Customize the teacher learners to learn independently. Students prepare for active learning. Realization of the success of the process of learning to use media technology-based learning is by teachers as an educator has in developing models of learning-oriented effectiveness and quality improvement learning, while the involvement of learners as can be seen by students learning to understand and use web-based learning media effectively in the learning process (Utami, 2017), including the use of media for student learning outcomes assessment (Hamid, 2016).

Utilization of facilities and infrastructure in learning one of the example is the utilization of the internet in the learning process. Forms of learning that utilizes internet connection called a model learning using web-based system. The learning model with regular web known as Web-Based Training (WBT), Web-Based Education (WBE) or more popular as Electronic Learning (E-learning).

Web-based learning media that makes use of information and communication technology, greatly helping teachers in carrying out the activities by learning. In addition students can also be helped by easy access and learning activities using the internet. so the tools in the form of modules, jobsheet, models, or other learning tools can be put into E-Learning, to help students understand the lessons easily and can be learned by students whenever and wherever (Dewy, Ganefri, & Kusumaningrum, 2016)

Web-based learning media can be equipped with a variety of attractive learning material so that it can direct students to do real practice in the learning process. Using the media of instruction, E-learning, the learning process can be done more effectively and efficiently. In addition, the learning process can also be a more appealing ask, motivation and semnagat for students in independent study (Fransisca, 2017).

Based on these conditions with the Online learning process that makes use of the internet network, can generate interest and desire a new, demotivating and evoking stimuli and learning activities, even bringing influences psychological against students (Saputra, Ismet, & Andrizal, 2018).

So that the constraints are that there is a process of learning, such as the limited time face-to-face learning for teachers to deliver all the material to students, can be replaced and given Online access or use web-based learning. So with the web-based learning media utilization is expected to increase the efficiency of student learning outcomes (Syahmaidi & Syahmaidi, 2015).

METHOD

This research using Research and Development (R&D) method. (Putra, 2012), simply defines R&D as a method of research that deliberately, systematically, aims to formulate findings, finding, repairing, developing, producing, testing the effectiveness of the product, model, methods/strategies/ the way a particular procedure, service, superior, new, effective, efficient, productive and meaningful. According to (Thiagarajan, 1974), 4D model consists of 4 stages of development i.e., Define, Design, Develop, and Disseminate. The first

stage, namely the stage of define form of observation activities conducted to know the background and problem identification, barriers, as well as any phenomena encountered in the field. The second stage is the stage of design the selection of media and the design and manufacture of prototype web-based learning media. The third stage, namely the development phase which contains validity and effectiveness of this stage of the development of web-based learning media that is done via two steps, namely the assessment of experts (the expert appraisal) followed by a revision, developmental testing. The fourth stage, namely the stage of dissemination committed to promoting development in order to be acceptable to the user, either an individual, a group, or system.

The aspect of effectiveness is examined with the test results of the learning to the students. By providing the initial test and the final test after using web-based learning media.

Analysis of the validity of the web-based learning media using the formula (1):

$$percetage = \frac{\sum Score\ of\ each\ item}{\sum ideal\ item\ score}\ x\ 100\%$$

Table 1. The Category of Validity of Web-based learning media

No	The Level Of Achievement (%)	Category
1	81 – 100	Very valid
2	61 – 80	Valid
3	41 – 60	Quite valid
4	21 – 40	Less Valid
5	0 – 20	invalid

(Arikunto, 2012)

Analysis of The Effectiveness Of Web-based learning media using the formula (2):

$$DA = \frac{\sum x}{n \times \sum item \times highest\ scale} \times 100\% \qquad (2)$$

Keterangan:

DA = The Degree of Achievement

$\sum x$ = Total Score of measurement results

n = Number of samples / respondents

$\sum item$ = The Number of Instrument

Table 2. The Category of effectiveness of Web-based learning media

No	The Level Of Achievement (%)	Category
1	81 % - 100 %	Very Effective
2	61 % – 80 %	Effective
3	41 % – 60 %	Quite Effective
4	21 % – 40 %	Less Effective
5	0 % – 20 %	Not Effective

(Arikunto, 2012)

RESULTS AND DISCUSSION

Instrument of validation is used to determine the validity of the products developed. The validation is done by two expert. Validation against the application components of the web-based learning media and validation of the content/material and appearance design of the web-based learning media.

The results of the assessment of each indicator aspect of the given by validator aggregated and calculated the percentage of assessment according to the aspects that have been made. The results of the validation of web-based learning media can be seen in Figure 1.

Based on Figure 1 concluded that the media is a web-based learning included in the category of "very Valid.

Effectiveness were observed in the process of learning to use web-based learning media is the learning outcomes of students in the learning process. Data collection instruments obtained from test results of a study that is given, in the form of multiple choice question which is given through a pretest and postest. Figure 2 is the result of the effectiveness of the web-based learning media.

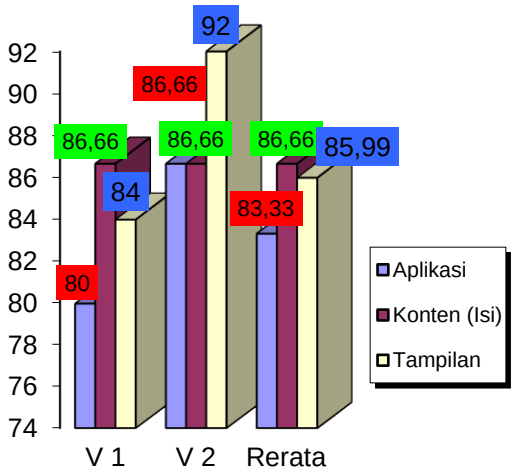

Figure 1. The Validation of Web-Based Learning

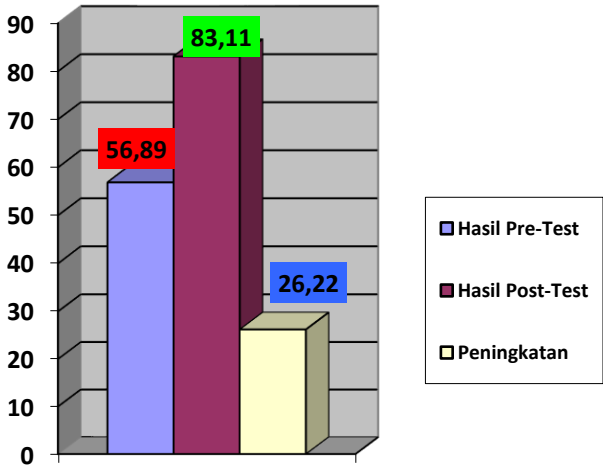

Figure 2. The Effectiveness of Web-Based Learning

Web-based learning media including on the category "Very effective" for the enhancement of student learning outcomes.

CONCLUSION

Web-based learning media developed it included on the category is valid, practical and effective. Web-based learning media effectively to improve student learning outcomes.

It is recommended for the school (Principal), further optimize and complete supporting facilities and infrastructure for web-based learning media. For teachers, it should implement a web-based learning media on other subjects, in order to improve student learning outcomes. Other researchers are expected to do more research to a broader scale.

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