

Website-Based Learning Media Development for Computer and Basic Network

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Abstract: This research aims to develop website-based learning media designed for the development of valid, practical, effective, efficient and interactive learning media. This medium that has been developed will help students to be more active by utilizing information technology so that students are more independent in developing their knowledge. Learning can be done in classroom or outside school and any time to improve student learning outcomes. This research uses Four-D which is consists of define, design, develop, and dissemination. The data used is primary data, data which directly from the source, among others, experts as valid data validation experts, educators and students. Data analysis used is descriptive analysis. The results of this research can be obtained from the development of media as a tool that can be utilized in the teaching and learning process online. Based on the research that has been done, it can be concluded that (1) The results of effectiveness obtained from the pretest and posttest comparisons of students in increasing mastery in learning by 50%. (2) Practical results obtained from the teacher's response to the website-based media developed by 95% were stated as "very practical" while the students' response to the website-based media was 83% stated "very practical". This research shows that this website-based learning media was valid, practical and effectively used as a learning medium.

Keywords: Learning media, website, learning effectiveness, praktikalitas

INTRODUCTION

Education becomes an important aspect in the framework of developing self potential especially to improve thinking skills, character building, and ability that can be used in the family, community, nation and state environment. Education is a guidance to achieve a dream and ideals that are expected to be better in the future (Yahya, 2002: 12). Education can shape the people character who can direct people's life to be more qualified.

One of the secondary school education institutions is Vocational High School. Vocational high school is one of the formal education institutions with aims to develop certain skills and expertise. Vocational graduates are prepared to enter employment and to develop professional attitudes in the world of work.

One of the Vocational Schools that will be discussed in this study is SMK Negeri 2 Padang. This school is one of the schools that has implemented the 2013 Curriculum (K13). The curriculum is implemented in the Computer Network Engineering Department. This department also has a Computer and Basic Network subject area of expertise. These subjects are studied at the first level of class X.

Computer Subjects and Basic Networks require understanding, applying, analyzing, and conceptual and operational evaluations related to computer engineering and basic networks. These aspects cover the technical, detailed, specific, and complex aspects associated with science, art, humainora, and culture. In addition, Computer Subjects and Basic Networks are also directed at developing students' potential as part of their families, domestic and international communities

Computer Subjects and Basic Networks contain discussion of the basics of computer networks, structures, and network media. Computer network is a computer liaison with one another that can divide data or exchange information quickly, accurately and precisely to the sender for the recipient through the communication media.

These Computer Subjects and Basic Networks are adjusted to Basic Competencies (KD), where students are able to carry out specific tasks by using tools, information and work procedures that are commonplace to solve a problem that is in accordance with the field of work in Computer and Network Engineering.

One of important aspect of achieving more advanced education is the support of facilities and technology. This aspect is able to create more quality education so that it will produce human resources that can compete. Therefore, creating quality education requires the synergy of various components. These components include professional educators and curricula that are suitable for learning objectives and supported by clear learning concepts.

The existence of internet facilities greatly facilitates the learning process so that the learning materials delivered by the teacher to students are better. According to Lia Kusarisanno, et al (2007: 2) the internet is a computer network that is only intended in a corporate or institutional environment. Today, the internet has been used by educational institutions or other similar institutions both in groups and individuals. But in reality, there is still a lot of learning that has not used the internet (website-based) as a good learning media that can even support success in providing learning materials in the teaching and learning process at school, outside the school, wherever and whenever learning is done.

Learning media is important in improving the learning process. Therefore, the use of media can improve learning outcomes. The argument is reinforced by the assumption that the use of media aims to lure students more active, effective, and interactive. Kustandi and Bambang (2011: 8) revealed that learning media is a tool that can help the teaching and learning process and serves to clarify the meaning of the message conveyed so that it can achieve better and perfect learning objectives.

According to Azhar Arsyad (2007: 15) one of the functions of learning media is as a teaching aid that also influences the climate, conditions, and learning environment that is organized and created by the teacher. That is, learning media is a teaching aid that is very important in the learning process in the learning environment in learning.

Based on the background and problems of this study in Padang N 2 Vocational School. Not yet the maximum of computer-based learning media used by teachers: (1) Learning media that are on the internet and media are supported by software applications in learning so that students are not maximized in learning delivered teacher. (2) the importance of developing a website-based learning media. The existence of website-based learning media can create learning that is active, effective and interactive. Submission of material with website-based media will make students more easily understand the material (3) Learning outcomes that are less than the maximum in completeness in learning.

METHOD

The methodology of this research used the Research and Development (R & D) method. R&D is a research method that produces products and tests the effectiveness of these products. To be able to produce a product, it is used research that is needs analysis and tests its effectiveness so that it can be utilized in the development of research

Research and development methods are research methods needed to produce certain products that are used and testing the effectiveness of certain products (Sugiyono, 2010: 297). Products are analyzed according to their needs and effectiveness tested so they can function more broadly.

The development procedure is carried out by giving a procedure explanation in product development. The procedure for developing website-based learning media that is used as a learning medium in the learning process uses the Four-D model developed by Sivasailan Thiagarajan, Dorothy S. Samuel, and Melvyn I, Semmel (1974). This model consists of four stages of development, namely Define, Design, Develop, and Disseminate or adapted to a 4-D model, namely defining, designing, developing, and distributing. The development steps are seen in Figure 1 below.

Figure 1: Procedure for Research Four-D Model Development Procedures (Source: Sivasailan Thiagarajan, Dorothy S. Samuel, and Melvyn I, Semmel (1974))



RESULT

Development of website-based learning media in the Department of Engineering and Computers and the Basic Network of Padang State Vocational High School 2, which has carried out an analysis of these subjects. Based on this analysis, the development of website-based learning media can help to solve learning problems for students in learning. The problems of students being very important references need to be reviewed, because it will have an impact on student learning outcomes that are low. The development of

website-based learning media that has been developed on computer subjects and basic networks will be more interesting. Students are more active, effective and interactive. In addition, students are easier to interact with educators and make it easier for students to learn independently whenever and wherever the students are in groups or in groups.

Results of Analysis of Data Effectiveness Test

This was obtained from the research tried in vocational high schools, namely on Computer subjects and the Basic network of TKJ Department of SMKN 2 Padang, which used to provide tests conducted at the beginning where students had not used the developed media. Furthermore, students will be given a posture where students are given treatment in learning in the teaching and learning process already using learning media that have been developed. The results in learning that have been carried out on the pretest and posttest tests in the given form are multiple choices in the amount of 25 questions. The pretest and posttest test results can be seen in Table 1.

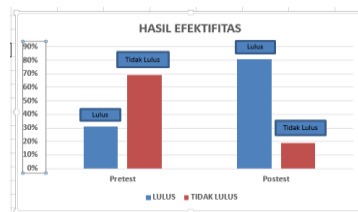
Table 1. The pestest and posttest test result

Pengujian	Total Siswa	Hasil Belajar		Skor Presentase	
		Total Lulus	Total Tidak Lulus	Lulus	Tidak Lulus
<i>Pretest</i>	36	11	25	31%	69%
<i>Postest</i>	36	29	7	81%	19%

The results of the table above in pretest given to students from a total of 36 students. The total graduated amounted to 11 students with a percentage score by 31% while not graduating as many as 25 students who did a pretest test by 69%. Students who conducted Posttest were given who had used website-based learning media for graduating students as many as 29 students with a percentage score by 81% while students who did not graduate were 7 students with a percentage score by 19%. The results of the pretest and posttest showed an increase in student learning by using instructional media that had been developed and based on the website. This learning result is also calculated by using the gain score obtained from the pretest and posttest with a minimum gain score of 0.00 while the Maxsimal gain score is 0.82. So that the gain score is 0.41 which is categorized as medium.

The results of this study indicate that using utilizing website-based learning media can improve student learning that has been proven by the results of student learning effectiveness. Improved student learning outcomes are seen from the graph of the results of the pretest and posttest.

Figure 2. The Result of Pretest and Posttest Graph



The Graph results show the use of website-based learning media can help to solve learning problems for students in learning. The problems of students become very important references need to be reviewed, because it will impact on the student learning outcomes to be low. The development of website-based learning media that has been developed on computer subjects and basic networks will be more interesting. Students are more active, effective and interactive. In addition, students are easier to interact with educators and make the students easier to learn independently whenever and wherever the students are in groups or in groups.

Practicality Results

Teacher's response to Website-Based Learning Media

The questionnaire are given to the educators or teachers on the assessment responses of website-based learning media that were used as the development of learning media. Fill out the questionnaire given by the

teacher can be known: first; Technically the teacher assesses website-based development that is developed towards teacher / practitioner responses of 96%. Second; in time the teacher judges to be more effective because it is not limited to space and time and can be done at any time even if not in the classroom. The assessment score given by the teacher is 93%. Third; The design of the teacher's media gives a score of 96%. The overall score assessment of teachers on website-based learning media by 95% was stated to be "very practical".

Student Responses to Learning Media that developed based on the Website

The questionnaire are given to the students for the assessment of website-based learning media used as a media development for student learning on the website-based learning media developed was 83% categorized as "Very Practical". It can be concluded that the use of learning media is very helpful for students in learning.

The Results of the use instructional media that has been used by class X students in the network computer engineering department at the Negeri 2 Padang School of Science on Basic Computer and Network subjects:

Figure 3 Login Slide

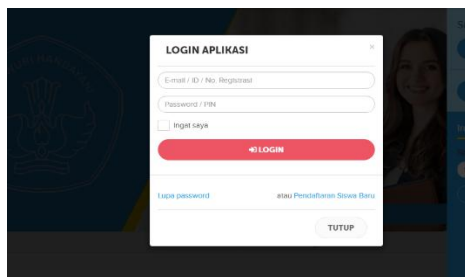


Figure 4. Learning Material Slide

No.	Pembelajaran	Kompetensi Dasar	Bahan
1.	Pembelajaran 1	KD 3.1 dan 4.1	1
2.	Pembelajaran 2, 3 dan 4	KD 3.2 dan 4.2	2
3.	Pembelajaran 5 dan 6	KD 3.3 dan 4.3	3
4.	Pembelajaran 7	KD 3.4 dan 4.4	4
5.	Pembelajaran 8, 9 dan 10	KD 3.5 dan 4.5	5
6.	Pembelajaran 11	KD 3.6 dan 4.6	6
7.	Pembelajaran 12	KD 3.7 dan 4.7	7
8.	Pembelajaran 14 dan 15	KD 3.8 dan 4.8	8
9.	Pembelajaran 16	KD 3.8 dan 4.8	9

Figure 5. Online Test Slide

Ujian Online

Soal No. 1

Apabila memuliskan komputer dengan menggunakan sistem operasi windows dengan menggunakan prosedur yang benar adalah...

A. Shut System

B. Shut up

C. Pull down

D. Shut down

E. Download

Figure 6. Students Discussion Slide



CONCLUSIONS

Based on the results of the analysis and discussion, it can be concluded that the existence of website-based learning media can create active learning, effective and interactive. Submission of material with website-based media will make students more easily understand the material and improving learning outcomes can be proven by the learning outcomes that have been given the test and posttest on the media developed. The response of teachers and students to the development of website-based learning media on computer subjects and basic networks in the Network Computer Engineering Department of Vocational High School 2 in Padang which has been developed very practical to be used as a completion of learning outcomes.

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