

The Development of Web-Based Learning Media in Class VIII English Subjects at SMP Muhammadiyah-16 Lubuk Pakam

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Abstract. This study aims to: a) determine the feasibility of developing web-based learning media in English subjects; b) knowing the effectiveness of web-based learning media in English subjects. This research uses a development research approach (Research and Development) with the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). The results of this study show that: a) the feasibility of web-based learning media in English subjects obtained by media expert validation with an average mean score of 4.45 with a percentage of 89% very feasible interpretation; design expert validation with an average mean score of 4.6 with a percentage of 92% interpretation is very feasible; expert validation of the material with an average mean score of 4.5 with a percentage of 90% of interpretation is very feasible; trials of individual students with an average score of 4.3 with a percentage of 86% very high acceptance interpretation; student group trials with an average score mean of 4.5 with a percentage of 90% of interpretation of very high acceptance. b) the effectiveness of web-based learning media in English subjects shows a significant difference between student learning outcomes in experimental classes, namely students who are taught using web-based learning media in English subjects and student learning outcomes in control classes, namely students who are taught without using web-based learning media in English subjects at a significance level of 0.05 or 5%. The result of the t-test showed that the posttest of the experimental and control group showed that $t_{\text{count}} > t_{\text{table}}$ was $3.225 > 1.6772$. The results of the average score of the posttest experimental group were higher 88% than the control group 64%. Thus, it can be concluded that the web-based learning media developed is feasible and effective to be used to improve student learning outcomes.

Keywords: Research and Development, Learning Media, Web, English.

1 Introduction

Education is one of the determining factors for the progress of the nation, because through education it can create quality human beings. The quality of education can be seen in the

indicators of success in learning, namely by achieving learning objectives. One of them is by increasing students' understanding of the material presented which can be seen through the learning outcomes of students. According to Dimiyati and Mudjiono (2009: 256) states that learning outcomes are the level of success obtained by each student after participating in learning activities marked by grades.¹

The development of communication and information technology has a very large influence on changing the learning process. Learning media can also help students to improve understanding, present data by dancing and trusting, facilitate data interpretation, and condense information (Arsyad, 2014).²

English is one of the most important subjects because language is a means of communication to meet the needs of life and as a cultural identity. There are four objectives of teaching English in Junior High School, namely students must have the skills of listening, speaking, reading, and writing in English.

Appropriate and useful solutions are needed so that English language learning can achieve the desired goals and competencies. Efforts to provide access to adequate learning resources can be made through web-based learning media. E-learning is generally a website where users can interact with each other. Learning processes that can be done such as delivering teaching materials, as well as evaluating learning for students.

Web-based learning is one of the solutions to the limitations when teachers and students are in learning activities at school, especially now that Indonesia is experiencing an outbreak of Coronavirus Disease (Covid-19). Covid-19 currently has an impact on all Indonesian people, one of which is in the field of education (Dewi, 2020).³ Learning activities are carried out online / remotely or learning from home (Circular Letter of the Minister of Education and Culture, No. 4 of 2020).

Edmodo is an educational site based on social networking in which there is a variety of content for education. Teachers can add learning materials, share links and videos, project assignments, and student grade notifications directly.

From the initial observations at the Muhammadiyah Private Junior High School (SMP) 16 Lubuk Pakam, it already has learning facilities that can be said to be quite adequate. Facilities that support the learning process include the existence of a projector, the existence of computer laboratory facilities, and also the availability of a Wi-Fi network to help both teachers and students find knowledge that is in accordance with the subject matter and current technological developments. However, in reality the existing facilities have not fully supported learning activities to get the expected learning outcomes, this can be evidenced by the low acquisition of learning outcomes.

Based on the description above, researchers will use teaching materials as a learning resource for students that can be used to improve thinking skills by presenting real problems in everyday life, both in the school environment so that it is expected to improve student learning outcomes in English subjects.

The formulation of the problems contained in this study, namely: (a) Is the web-based learning media in English subjects developed suitable for use in class VIII students at SMP Muhammadiyah-16 Lubuk Pakam?; (b) Is the web-based learning media in English subjects developed effectively used for class VIII SMP Muhammadiyah-16 Lubuk Pakam?

Based on the formulation of the problem that has been described, the objectives of this study are: (a) To determine the feasibility of developing web learning media in English subjects for class VIII students at SMP Muhammadiyah-16 Lubuk Pakam; (b) To find out the effectiveness of web learning media on English subjects for class VIII students at Muhammadiyah-16 Middle School Lubuk Pakam.

2 Theoretical Description

Learning theory is a theory in which there are procedures for applying teaching and learning activities between teachers and students, as well as designing learning methods that will be carried out in the classroom and outside the classroom. According to Hamid (2014: 6) learning theory focuses on the relationship between variables that determine learning outcomes.⁴

According to Law No. 20 of 2003 concerning the National Education System article 1 paragraph 20 states "learning is the process of interaction between students, teachers and learning resources in a learning environment".

The Association for Education, Communication and Technology (AECT) describes the media as the delivery of the process of conveying information. According to Mayer (2014: 1) explains that multimedia learning includes words and images and includes learning through textbooks containing text and illustrations, basic computer learning that contains animations and narratives and slides of face-to-face presentations containing graphics and spoken words.⁵

According to Riyana (2007) learning videos are audio-visual media that contain good learning messages to help make it easier for students to understand the subject matter.⁶ Learning videos have a very high appeal, this is inseparable from the presentation which displays videos in the form of images accompanied by sound, so that the senses of sight and hearing are also aroused.

According to Miarso (2004: 550) four references contained in learning (learning outcomes) (1) the existence of new abilities or changes; (2) the change or new establishment does not last a moment, but rather settles and can be kept; (3) the change and the new capability occurred due to effort; (4) the change or new ability does not arise only due to growth factors.⁷

According to Efendi (2013: 48) English is a very important lesson in high school. English is directed to develop speaking, writing, listening, and reading skills.⁸

Reading can be defined as the ability to obtain the message conveyed by the author through the medium of words. According to Samo, R. (2018) "reading is primarily reflected as a dynamic meaning-focused interaction in which students are required to build comprehension of a text in a non-linear way".⁹ Reading is also a simultaneous process of information in the text and previous reader knowledge developed to establish meaning before, during, and after reading (Kimberly, 2014).¹⁰

Rusman (2012: 335) stated that website-based learning popularly known as Web-Based-Education (WBE) or sometimes called e-learning (electronic learning) can be defined as the application of website technology in the world of learning for an educational process.¹¹ According to Januarisman and Ghufroon (2016: 169) This concept, known as e-learning or website-based learning media, has an influence on the process of transforming learning towards digital forms, both in content and system.¹²

Edmodo is a platform pioneered by Nicolas Brogdan Jeff O'Hara in late 2008 that allows interaction between users who play the role of teachers and students. According to Angraini, Muharini and Lestari (2018) Edmodo allows students to access learning content uploaded (learning materials, links, learning videos, assignments, and grade notifications) by teachers and makes it easier for teachers and students to communicate in an online classroom environment.¹³

3 Method

This type of research uses research and development methods. This research will use the research and development model from ADDIE model developed by Branch (2009).¹⁴ The development procedure in this study is divided into 5 (five) stages, namely: 1) Analysis, aimed at designing English learning media; 2) Design, including designing the appearance of e-learning and collecting materials needed for product development; 3) Development, is the assembly of media / merging all materials such as subject matter, images, animations, text, and learning videos; 4) The implementation is the application of e-learning using the Edmodo Learning Management System (LMS) that has been developed; 5) The evaluation is carried out an assessment of the data that has been collected at the implementation stage.

Descriptive analysis is used to analyze and describe the data that has been collected. Quantitative data obtained from questionnaires given to material experts, media experts, design experts as well as students are presented in the form of tables and in descriptive narrative exposure. The results of descriptive statistical analysis are used to determine the feasibility of the developed media. The interpretation of multimedia feasibility of learning is carried out through descriptive statistical calculations. Answer scores in the range of 1 – 5 are tabulated and calculated average score", and can be seen in the following table (Sriadhi, 2018)¹⁵:

Table 1. Interpretation of Multimedia Feasibility.

No	Interval Mean Score	Interpretation
1.	1,00 – 2,49	Not Worth It
2.	2,50 – 3,32	Less Viable
3.	3,33 – 4,16	Proper
4.	4,16 – 5,00	Very Worthy

The interpretation of multimedia feasibility on acceptability (the level of acceptance by the user/ user) is carried out through a descriptive statistical calculation. Answer scores in the range of 1 – 5 tabulated and calculated average scores can be seen below (Sriadhi, 2018) ¹⁵:

Table 2. Interpretation of Multimedia Feasibility.

No	Interval Mean Score	Interpretation
1.	1,00 – 2,49	Low Acceptance
2.	2,50 – 3,32	Sufficient Acceptability
3.	3,33 – 4,16	High Acceptance
4.	4,17 – 5,00	Very High Acceptability

The product effectiveness test aims to determine the extent to which the learning media developed can improve student learning outcomes in English subjects. The data analyzed in

this effectiveness test are student scores obtained from the experimental student group and the control student group. The average scores of the two groups of students were tested using the t-test. For hypothesis testing, a one-tailed test formula is used.

4 Results and Discussion

Based on product validation through a series of trials and revisions that have been made, web-based learning media has a valid status. The experiment was carried out in 4 stages, namely: (1) evaluation of learning media experts, learning design experts, and learning materials experts; (2) individual trials, (3) student group trials, and (4) summative evaluation.

Product Eligibility

Learning Media Expert Validation Results

Validation of learning media is carried out by media experts on web-based learning media. Learning media experts validate products on aspects of display, content feasibility, presentation and graphic.

Table 3. Average Score web-based Media Assessment by Learning Media Expert.

No	Interval Mean Score	Score	Percentage
1.	Guidelines and Information	4,6	92%
2.	Programming	4,2	84%
3.	Systematics	4	80%
4.	Aesthetic	4,7	94%
5.	Narration and Audio Quality	4,7	94%
6.	Video Quality/ Animation	4,5	90%
	Mean Score	4,45	89%
	Interpretation	Very Worthy	

Based on the validation results of learning media experts in the table above, it can be seen that web-based learning media in English subjects at obtaining an average assessment in each aspect, there is a mean total score of 4.45 with percentage 89% the interpretation of "very feasible".

Learning Design Expert Validation Results

Validation of learning designs is carried out by design experts on web-based learning media. Learning design experts carry out product validation on aspects of content feasibility and graphics in accordance with the process and stages of instructional development.

Table 4. Average Score Web-based Media Assessment by Learning Design Expert.

No	Interval Mean Score	Score	Percentage
1.	Information Design	4,6	92%
2.	Learning Design	4,6	92%
	Mean Score	4,6	92%
	Interpretation	Very Worthy	

Based on the validation results of learning design experts in the table above, it can be seen that web-based learning media in English subjects at obtaining an average assessment in each aspect, there is a mean total score of 4.6 with percentage 92% a "very feasible" interpretation.

Expert Validation Results of Learning Materials

Validation of learning materials is carried out by material experts on web-based learning media. Learning material experts validate products on aspects of the material, learning process, and language.

Table 5. Average Score web-based Media Assessment by Learning Materials Expert.

No	Interval Mean Score	Score	Percentage
1.	Guidelines and Information	4,7	94%
2.	Multimedia Materials	4,4	88%
3.	Evaluation	4,5	90%
Mean Score		4,5	90%
Interpretation		Very Worthy	

Based on the results of expert validation of learning materials in the table above, it can be seen that web-based learning media in English subjects at obtaining an average assessment in each aspect, there is a mean total score of 4.5 with percentage 90% a "very feasible" interpretation.

Student Individual Trial Results

Based on the results of the acceptance of learning media by students in individual trials, it can be seen that web-based learning media in English subjects have a mean score of 4.3 with percentage 86% a "very feasible" interpretation.

Student Group Trial Results

Based on the results of the acceptance of learning media by students in student group trials, it can be seen that web-based learning media in English subjects have a mean score of 4.5 with percentage 90% a "very feasible" interpretation.

Product Effectiveness Test

The data normality test was carried out to find the normality of the sample under study. Normality test using The Lilliefors Technique. After calculations were carried out, in the experimental class, the value of $L_{count} = 0,108$ and L_{table} at a significance level of 5% was obtained with $n = 25$ is 0,173. This shows the value of $L_{count} < L_{table}$ which means that the sample comes from a normally distributed population.

The results of the calculation of the data normality test in the control class were obtained $L_{count} = 0,123$ and L_{table} at a significance level of 5% with $n = 25$ is 0,173. This shows the value of $L_{count} < L_{table}$ which means that the sample comes from a normally distributed population.

Table 6. Summary of Data Normality Test Results.

No.	Data	Class	L_{count}	L_{table}	Conclusion
1.	<i>Post-test</i>	Experiment	0,108	0,173	Normal
2.		Control	0,123	0,173	Normal

Homogeneity testing is carried out to find out about population variations, namely whether the research data used have the same or different population variants. The data homogeneity test in this study was carried out with the F test and obtained a calculated F value of 0,78. while the F_{table} value at a significance level of 5% is 1,96.

Table 7. Summary of Data Homogeneity Test Results.

No.	Data	Class	L_{count}	L_{table}	Conclusion
1.	<i>Post-test</i>	Experiment	0,78	1,96	Homogen
2.		Control			

Hypothesis testing in this development research uses a one-tailed test formula. From the calculation results obtained $t_{count} = 3.225$ and the t_{table} value at a significance level of 5% of 1.6772 which means that the calculation $t_{count} > t_{table}$ ($3.225 > 1.6772$) which means H_0 was rejected and H_1 was accepted. Thus, the research hypothesis that states that students' English learning outcomes using web-based learning media are higher than students who learn conventionally (without using web-based learning media) are tested for truth.

The results of this study are in line with research conducted by Thesalonika (2019) which states that the web-based learning developed is feasible to use. This is reinforced by the results of validation carried out to media experts, design experts and material experts. From the results of the development of web-based learning media feasibility tests that have gone through the feasibility test stage from experts, the results show that web-based learning media are very feasible to use, where the average percentage of web-based learning media feasibility test results is 90% and the percentage of student trials is 88%. Based on the results of validation and trials that have been carried out, the development of web-based learning media is suitable for use in class VIII English subjects at SMP Muhammadiyah-16 Lubuk Pakam.

The results of this study are in line with research conducted by Joko and Wulandari (2018) in their research showing that the media developed using Edmodo has been effective for use. This is reinforced by the difference in the learning outcomes of students who use Edmodo-based learning media and those who do not use Edmodo-based learning media. So it can be concluded that the web-based learning media that has been developed is effective in improving learning outcomes in class VIII English subjects at SMP Muhammadiyah-16 Lubuk Pakam.

5 Conclusion

Based on the results and discussion of the development of web-based learning media in English subjects, it can be concluded as follows:

Products in the form of web-based learning media in class VIII English subjects at SMP Muhammadiyah-16 Lubuk Pakam have the results that are worthy of being the final product that can be disseminated and implemented to users. This is supported by several stages, namely validation to learning media experts (4.45) with percentage 89%, learning design experts (4.6) with percentage 92%, learning material experts (4.5) with percentage 90%, individual student trials (4.3) with percentage 86%, and student group trials (4.5) with percentage 90%. All assessment results obtained at the media, design, and material validation stages obtained an average mean score of 4.5 with percentage 90% including in the

interpretation of "Very Feasible" and individual trials and groups of students obtained an average mean score of 4.4 with percentage 88% including in the interpretation of "Very High Acceptability".

Based on the results of data processing, the average value of student learning outcomes using web-based learning media developed has been effective. This is shown by the calculation results is $t_{count} > t_{table}$ ($3.225 > 1.6772$) for a α significance level of 0.05. The effectiveness value of learning media using web-based learning media is higher at 88% than the conventional learning effectiveness value of 64%.

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