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DEVELOPMENT OF INTERACTIVE LEARNING MEDIA NETWORK SERVICE ENGINEERING USING SOFTWARE MULTIMEDIA ADOBE FLASH CS6

Priangga Pratama Putra Haryanto[1*], Hamsar Suci Amalia[1], Randi Tri Utomo[2]

[1]Politeknik Negeri Jakarta, Jakarta
[2]IKIP PGRI Kalimatan Timur, Samarinda

**Corresponding Address:* priangga.pph13@gmail.com

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ABSTRACT

Less interactive learning media accompanied by the delivery of less interesting material can make students feel bored when participating in learning. Therefore, interactive learning media can be the right alternative to overcome these problems. One of them uses the Adobe Flash CS6 Multimedia Software. This study aims to produce interactive learning media for computer network engineering in network service engineering subjects using a valid Adobe Flash CS6 Multimedia Software. This study uses the ADDIE development model (Analysis-Desain-Develop-implementation-Evaluate) which has five stages of development including analysis, design, development, implementation, and evaluation. Validation is carried out to determine the feasibility of the developed multimedia. Validation was obtained by using data collection methods in the form of questionnaires given to material experts and media experts. The responses of students and educators were obtained by collecting data in the form of a questionnaire. The results of material expert validation obtained an average of 91.67% with the "Very Eligible" category. The overall material validity test is 88.89% with the "Very Eligible" category. Practical test of learning media was tested by 1 teacher and 16 students. Practicality for the practicality test of teachers is 87.11% and practicality by students is 79.80% so that it can be interpreted very practical to use.
Keywords: Interactive Media, Adobe Flash Multimedia Software.

INTRODUCTION

Learning media is a tool or intermediary designed to facilitate the teaching and learning process, in order to make communication between teachers and students more effective. This really helps teachers in teaching and makes it easier for students to receive and understand lessons. This process requires teachers who are able to harmonize learning media and learning methods. Learning media is very necessary in messages to convey messages of failure during the communication process. Learning media is really needed by teachers at this time to help convey material in the learning process (Lestari, 2020).

Learning media that is less interactive and the delivery of material that is less interesting can make students feel bored when learning. Therefore, interactive learning media can be an appropriate alternative to overcome these problems (Arrosyida and Suprapto, 2012).

In reality in the field, students' training in the learning system will generally be separated, especially as beneficiaries, while learning is more focused on the instructor. Students look lethargic, many are lethargic and try to ignore the material, chatting with friends who pay little attention to what the teacher is teaching, which is difficult for students to understand. As a result, the presence of intelligent learning media is relied upon to display something dynamic and challenging to see working with understanding ideas. Interactive learning media is everything that concerns software and hardware that can be used as an intermediary to convey

the content of teaching material from learning resources to students with learning methods that can provide feedback to users from what has been input into the media (Arrosyida and Suprapto, 2012).

Network service technology is a subject that is listed in the 2013 revised curriculum for vocational high schools (SMK). This lesson discusses various standards and rules in communications technology, including data communications, data communications organization standards, world communications organization standards, Bandwidth, OSI Layer, VOIP technology, and many more. This is part of the subject group majoring in Computer Network Engineering (TKJ) at SMK N 2 Demak.

Based on interviews with network service technology teachers at SMK N 2 Demak, information was obtained that learning network service technology systems uses lecture methods, discussions and assignments to students. Students are less motivated to discover the concepts they have learned. This results in many students' learning outcomes not reaching the minimum completeness criteria (KKM). The speaking technique with a PowerPoint introduction was used due to limited time in learning. The use of media for unique learning materials can be concreted and make a boring learning atmosphere interesting. Many learning media are created for autonomous review.

Learning media that is less interactive and the delivery of material that is less interesting can make students feel bored when learning. Therefore, interactive learning media can be the right alternative to overcome this problem. This media was created using Adobe Flash CS6 Multimedia Software.

Based on the background of the problem above, the author is interested in designing a learning multimedia and presents it in the Final Project with the title "Development of Interactive Learning Media for Computer Network Engineering in Network Service Engineering Subjects Using Adobe Flash CS6 Multimedia Software at SMK N 2 Demak".

METHODS

Interactive learning media are computer-based tools or media that are used to convey learning material in the learning process and make it easier to achieve learning goals in class.

Network Service Technology is a system designed to serve users who use various types of devices and designed so that everything runs effectively and according to the needs of each user.

Validity is a measure that shows the level of validity of an instrument

Practicality is the ease of using learning media, after testing the learning media through distributed questionnaires.

The instruments used in this research include validation instruments, namely material and media experts; practicality instrument, namely to teachers and students. Analyze the data from the expert team's validation results using the following steps: create an assessment distribution table, determine the score categories using predetermined score conditions, add up the scores obtained for each category.

The questionnaire is also used as a tool for assessment to determine the practicality of media for teachers, media experts and students. The questionnaire functions to determine how far the influence of media use is absorbed by students and as feedback from the learning process that has been implemented. The questionnaire was distributed at the end of the meeting and then the data was analyzed.

A questionnaire was given directly to students to determine the scale of practicality of learning media using Adobe Flash CS6 Multimedia Software. The questionnaire was given after the media trial was carried out. The data analysis technique used in this research was a Likert scale with values of 1-4 categories. The flow of data analysis is data reduction, data presentation, and drawing conclusions.

RESULTS AND DISCUSSION

Based on the validity test questionnaire sheet for media experts, material experts and validation experts. To find out the validity value of learning media experts, the validity value and material experts using Adobe Flash CS6 Multimedia Software can be seen in the table below.

Table 1. Media Expert Validity Test Results.

No.	Assessed Acpect	No. Item	Sum	Value	Criteria
1.	Integration	1	9	86,67%	VeryValid
		2	8		
		3	9		
	Total		26		
2.	Balance	4	7	80%	Valid
		5	9		
	Total		16		
3.	Letter Form	6	9	87,5%	Very Valid
		7	9		
		8	8		
		9	9		
	Total		35		
4.	Colour	10	7	80%	Valid
		11	8		
		12	8		
		13	9		
	Total		32		
5.	Language	14	9	85%	Valid
		15	8		
	Total		17		
	Average			83,83%	Valid

Based on the validation results from media experts, it is known that the integration aspect received an average score of 86.67% in the "Very Valid" category. The balance aspect received an average score of 80% in the category "Valid. The letter form aspect received an average score of 87.5% in the "Very Valid" category. The color aspect received an average score of 80% in the "Valid" category and the language aspect received an average score of 85% in the "Valid" category. The overall media expert validator test for learning media using Adobe Flash CS6 Multimedia Software was 83.83% in the "Valid" category.

Table 2. Material Expert Validity Test Results

No.	Assessed Acpect	No. Item	Sum	Value	Criteria
1.	Quality of content and purpose	1	4	84,44%	Valid
		2	4		
		3	4		
		4	4		
		5	4		
		6	4		
		7	4		
		8	5		
		9	5		
	Total		38		
2.	Quality of learning	10	4	93,33%	Very Valid
		11	5		
		12	5		
		13	5		
		14	4		
		15	5		

Total	28		
Average		88,89	Very Valid

Based on the validation results from material experts, it is known that the content and objective quality aspects obtained an average score of 84.44% in the "Valid" category. The quality aspect of learning received an average score of 93.33% in the "Very Valid" category. The overall media expert validator test for learning media using Adobe Flash CS6 Multimedia Software was 88.89% in the "Very Valid" category.

Table 3. Material Expert Practical Test Results

No.	Assessed Acpect	No. Item	Sum	Value	Criteria
1.	Ease of use of media	1	7	92%	Very practical
		2	10		
		3	9		
		4	10		
		5	10		
	Total		46		
2.	Time efficiency	6	8	83,33%	Practical
		7	8		
		8	9		
	Total		25		
3.	Easy to present	9	9	85%	Practical
		10	8		
	Total		17		
4.	Suitability to the material	11	7	72%	Very practical
		12	9		
		13	7		
		14	4		
		15	9		
	Total		36		
5.	Attractiveness	16	9	90%	Very practical
		17	8		
		18	10		
	Total		27		
6.	Can be used as independent learning	19	10	100%	Very practical
	Total		10		
Average				87,06%	

Based on the teacher's practical results, it is known that the ease of use of media aspect received an average score of 92.00% in the "Very Practical" category. The time efficiency aspect received an average score of 83.33% in the "Practical" category. The easy to interpret aspect received an average score of 85% in the "Practical" category. The aspect of suitability to the material received an average score of 72% in the "Practical" category. The attractiveness aspect received an average score of 90% in the "Very Practical" category. Can be used as independent learning to obtain an average score of 100% in the "Very Practical" category. The overall practical test by teachers on learning media using Adobe Flash CS6 Multimedia Software was 87.06% in the "Very Practical" category.

Table 4. Practical Test Results by Students

No.	Assessed Acpect	No. Item	Sum	Value	Criteria
1.	Ease of use of media	1	65	81,25%	Worthy
		2	66		
		3	64		
	Total		195		
2.	Time efficiency	4	62	79,17%	Worthy
		5	63		

		6	65		
	Total		190		
3.	Suitability to the material	7	66	80,25%	Worthy
		8	62		
		9	63		
		10	66		
		11	64		
	Total		321		
4.	Attractiveness	12	64	79,58%	Worthy
		13	64		
		14	63		
	Total		191		
5.	Can be used as independent learning	15	63	78,75%	Worthy
	Total		63		
Average				79,80	Worthy

Based on the results of student assessments, it is known that the ease of use of media aspect received an average score of 81.25% in the "Decent" category. The time efficiency aspect obtained an average score of 79.17% in the "Decent" category. The aspect of conformity with the material received an average score of 80.25% in the "Appropriate" category. The attractiveness aspect received an average score of 79.58% in the "Decent" category. Aspects that can be used as independent learning obtained an average score of 78.75% in the "Decent" category. The overall practical test by students on learning media using Adobe Flash CS6 Multimedia Software was 79.80% in the "Decent" category.

Learning media uses the Adobe Flash CS6 Multimedia Software application which has been designed and created to foster students' enthusiasm and motivation to learn, because the image display for presenting the material is clear and there are interesting animations. Learning media using Adobe Flash CS6 multimedia software has several features, namely learning materials, sample questions, daily tests, and follow-up exams which function to make teaching easier for teachers, as well as increasing students' enthusiasm in answering questions and in ongoing learning. The learning media uses Adobe Flash CS6 multimedia software which has been created and then validated to determine the suitability of the media. Then the learning media using Adobe Flash CS6 multimedia software was tested by students in the form of a practicality test, to test the practicality of learning media using Adobe Flash CS6 Multimedia Software. The following is a discussion of each of the feasibility of learning media using Adobe Flash CS6 multimedia software.

Table 5. Results of Validity and Practicality Analysis

No.	Test Result	%	Information
1	Media Expert Validation	92,67	Valid
2	Material Expert Validation	88,89	Valid
3	Teacher practicality	87,11	Valid
4	Student practicality	79,80	Not Valid

Based on the table above, it can be concluded that designing and creating learning media using Adobe Flash CS6 Multimedia is very suitable for use in the learning process because the validity and practicality of learning media using Adobe Flash CS6 Multimedia Software has been tested.

Media validity

Validation of the media includes testing the suitability of the learning media which can be seen from the quality of the display presented in the form of a questionnaire. The media validation questionnaire consists of several aspects, namely integration, balance, letter shape, color and language. The assessment of all aspects produces an average of 91.67. With learning

media validation from media validation, learning media is categorized as very suitable for all categories.

Material validity

Validation of the material includes testing the suitability of the learning media which can be seen from the quality of the material presented in the form of a questionnaire. The material validation questionnaire consists of several aspects, namely the quality of content and objectives, the quality of learning. The assessment of all aspects produces an average of 88.89. With validation of learning material from material validation, the learning material is categorized as very appropriate for all categories.

Teacher Practicality

The results of the learning media practicality questionnaire are based on the teacher practicality questionnaire from all assessment aspects. The teacher practicality questionnaire consists of several aspects, namely ease of use of the media, time efficiency, ease of interpretation, suitability for the material and attractiveness. The assessment of all aspects resulted in an average of 86.11 with a very practical category for all categories.

Student Practicality

The assessment of the optimality of students' learning media was carried out by 16 students. Based on the questionnaire, student practicality consists of several aspects, namely ease of use of media, time efficiency, suitability for the material, attractiveness and can be used as independent learning. The assessment of all aspects resulted in an average of 79.80 with a decent category for all categories.

The results of this research are relevant to the research of Arrosyida and Suprapto (2012) in their research entitled Interactive Learning Media for Computer Networks Using Macromedia Flash 8 at SMK Negeri 1 Saptosari. The research results show that this development is (1) a computer network interactive learning media product which was developed through the analysis, design, development, implementation and evaluation stages; (2) The performance results through black box testing and alpha testing are good; (3) The quality of the learning media developed is included in the very decent category, this is obtained from the alpha testing assessment by material experts of 4.26 and media experts of 4.18, as well as the beta testing assessment by users of 4.29.

Also relevant to the research of Lestari et al (2020) in their research entitled Development of Interactive Learning Media in Basic Network and Computer Subjects for Class X at SMK Negeri 8 Malang using the APPED Method. The research results show that the ongoing evaluation shows that the media is valid, assessed from three aspects based on statements from the developer. The alpha testing results showed a percentage of 90% in the valid category from material experts, the percentage result from media experts was 79.1% in the valid category, and for instructional experts a percentage of 95% was obtained in the valid category.

Also relevant to the research of Lestari et al (2020) in their research entitled Development of Interactive Learning Media in Basic Network and Computer Subjects for Class X at SMK Negeri 8 Malang using the APPED Method. The research results show that the ongoing evaluation shows that the media is valid, assessed from three aspects based on statements from the developer. The alpha testing results showed a percentage of 90% in the valid category from material experts, the percentage result from media experts was 79.1% in the valid category, and for instructional experts a percentage of 95% was obtained in the valid category.

CONCLUSION

Based on the description, data analysis, and development of learning media using Adobe Flash CS6 multimedia software at SMK N 2 Demak, it can be concluded that validity test on

learning media for overall media validity is 91.67% in the "Very Appropriate" category. The overall material validity test is 88.89% in the "Very Eligible" category. Practicality test of learning media was tested by 1 teacher and 16 students. The practicality for the teacher practicality test is 87.11% and the practicality for students is 79.80% so it can be interpreted as very practical to use..

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