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Development of Learning Media Using Flypaper in Computer and Network Engineering at SMK Negeri 1 Painan

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Abstrak

Tujuan dari penelitian ini untuk menghasilkan sebuah media pembelajaran menggunakan flypaper yang valid, praktis, dan efektif pada mata pelajaran dasar-dasar teknik jaringan komputer dan telekomunikasi. Media pembelajaran menggunakan flypaper ini dirancang untuk meningkatkan hasil belajar siswa. Metode pada penelitian ini menggunakan Research and Development dengan model pengembangan 4-D. Teknik analisis data menggunakan teknik analisis deskriptif untuk mendeskripsikan validitas, praktikalitas, dan efetivitas media pembelajaran menggunakan flypaper. Hasil yang ditemukan dari penelitian pengembangan ini: (1) validitas media pembelajaran menggunakan flypaper dinyatakan valid pada validasi media sebesar 0,86 > 0,6 dan validasi materi sebesar 0,87 > 0,6. (2) Praktikalitas media pembelajaran menggunakan flypaper dari respon guru dengan nilai sebesar 91,65 % dan respon siswa sebesar 84,94 % dinyatakan sangat praktis. (3) Efektivitas media pembelajaran menggunakan flypaper dinyatakan efektif dalam meningkatkan hasil belajar siswa. Disimpulkan bahwa media pembelajaran menggunakan flypaper dinyatakan valid, praktis, dan efektif untuk dimanfaatkan sebagai alat bantu pembelajaran pada mata pelajaran dasar-dasar teknik jaringan dan telekomunikasi.

Kata Kunci: media pembelajaran, *flypaper, hasil belajar*

Abstract

This research aims to produce a learning media using flypaper that is valid, practical, and effective in the basics of computer network engineering and telecommunications. Learning media using flypaper is designed to increase student learning outcomes. The method in this study uses Research and Development (R and D) with the 4-D development model. The data analysis technique uses descriptive techniques to describe the validity, practicality, and effectiveness of learning media using flypaper. The results found from this development research: (1) the validity of learning media using flypaper was declared valid in media validation of 0.86>0.6 and material validation of 0.87> 0.6. (2) The practicality of learning media using flypaper from teacher responses with a value of 91.65% and student responses of 84.94% is declared very practical. (3) The effectiveness of learning media using flypaper is declared effective in improving student learning outcomes. Its concluded that learning media using flypaper is valid, practical, and effective to be utilized as a learning tool in basic network and telecommunication engineering subjects.

Keywords*: learning media, flypaper, learning outcomes*

INTRODUCTION

Education is a human strategy to improve the quality of life so that education and humans are interrelated in their own lives, family life, and the surrounding community. Furthermore, a nation's successful quality of education is achieved by the efforts made to improve the quality and quality of education in the nation itself. Education not only provides knowledge for daily life but also for the development of intellectual and emotional as well as the ability to adjust to unknown future situations and conditions.

One of the important roles of education can affect the progress of civilization and human life because the field of education can be developed potential and abilities/skills that make qualified humans (Akbarini et al., 2018; Zagoto, Yarni & Dakhi, 2019). The advancement of information technology must be connected to the role of humans who have well-developed potential and skills that follow the quality of the technology so that quality and education are needed, which can be realized through a good foundation and effort. (Dakhi et al., 2020; Syofii & Sari, 2020) Graduates at the secondary school education level, one of which is SMK (Sekolah Mengah Kejuruan), SMK is a vocational education that applies and develops not only vocational skills but also knowledge and attitudes with a good personality in community relations. So that SMK has a role in technological progress by developing the potential of graduates with knowledge and skills with good morals to be ready to work in their fields or be able to continue to college with majors that are linear with their majors.

Merdeka Curriculum uses varied intracurricular learning where content will be optimized, so learners have enough time to understand concepts and strengthen competencies. Projects to improve the achievement of the Pancasila learner profile are designed based on specific themes determined by the government. The projects are not geared towards achieving specific learning outcome targets, so they are not tied to subject content.

SMK should be able to produce graduates who have good attitudes, skills, and appropriate knowledge. In the Decree of the Ministry of Education, Culture, Research, and Technology that regulates the curriculum structure of vocational secondary education, there are changes to the basic subjects of expertise programs in SMK.

Based on the results of observations and interviews conducted with the teacher of the Basics of Computer Network Engineering and Telecommunications Class X TKJ subject at SMK Negeri 1 Painan, namely Mr. Beni Astario, S.Pd., gr., M.Kom in November 2022, data and information were obtained that the learning carried out by the teacher in the classroom so far has used more conventional methods, namely by using stationery, books and teacher-centered in supporting the teaching and learning process. Meanwhile, utilizing computer-related media in the learning process still makes students less enthusiastic in the learning process. The media used by the teacher in the classroom are PowerPoint slides displayed on the LCD Projector. Due to the lack of variety in the use of media used by teachers, students' enthusiasm for learning is low, and they are not severe in participating in the teaching and learning process in each subject matter presented by the subject teacher.

The problem that the researchers found further in the observation was the low learning outcomes of students in class X TKJ in the subject of Fundamentals of Computer Network Engineering and Telecommunications that out of 32 students in class X majoring in TKJ at SMK

Negeri 1 Painan, and 17 students achieved knowledge scores that met the predetermined minimum completeness standards (≥70). While 15 other students obtained knowledge scores below the minimum standard of completeness criteria, and 7 students had practice scores below the minimum standard of completeness. Hence, the data shows that there are still many students who have low knowledge scores and some students whose practice scores have not reached the criteria.

In addition, based on observations, researchers found a solution offered to teachers by conducting media development research on the Fundamentals of Computer Network Engineering and Telecommunications, where learning media development uses Flypaper software or applications (part of Lectora). Researchers chose to use the Flypaper application because of the good quality results and hardware requirements for running applications that are not high, which can reduce the file size to be displayed. Because the learning media developed is interactive multimedia, it will allow two-way communication between the application and students as learning media users.

Therefore, learning media has become one of the essential elements in the learning process; in determining the type of learning that will be used in learning. Educators must be able to understand the function of the media used to improve the quality of the use of learning media; thus, media users can understand what is displayed through learning media (Rizki, Gunawan, & Amirudin, 2020).

Multimedia can be interpreted as a combination of various aspects in text, graphics, sound, animation, and video that can be converted into a complex medium to support the teaching and learning process (Herdini et al., 2018; Mudinillah, 2019). Multimedia has the advantage of actively communicating with users, while for users using multimedia can be interpreted as the display/presentation of information provided through various aspects.

Interactive learning media supports learning activities that can significantly achieve learning objectives, where students who become active are one of the impact users of interactive learning media (Oktari Chotimah & El Paisal, 2018). Active here relates to activities from finding, exploring, investigating, and building self-knowledge of learning carried out by students. Teachers (educators), as important actors in the teaching and learning process, are expected to have skills and creativity that direct learning to be effective, for example, by selecting media, models, instruments, and learning resources (Ryll et al., 2019).

Flypaper is one of the production software of the world's leading e-learning product Lectora which is used by companies in more than 125 countries and offered in six languages, and flypaper is the leading Flash content creation platform of Lectora e-learning product which also includes a learning management system (Learning Management System) headquartered in Cincinnati, Ohio with offices in Boca Raton, Phoenix, Paris, London, and Beijing which is a trademark of Trivantis Corporation. Flypaper combines text, images, videos, flash, transition animations, memory games, et cetera (Shalikhah, 2017). This software can produce file types in the form of swf so that it can be easily integrated with Lectora inspire or made into .exe file types easily.

METHOD

This type of research is a type of research and development (Research &

Development), which is research conducted to produce products or improve existing products by conducting previous trials on these products to obtain the effectiveness of these products (Sugiyono: 2018). This research uses the 4-D (four D) development model for developing learning media. Trianto (2012) suggests there are four stages of 4-D, namely: (1) define, (2) design, (3) develop, and (4) disseminate. Conducted this research in class X of the Computer and Network Engineering department at SMK Negeri 1 Painan; carried out this research in January 2023. The population which became the research object were teachers who taught and grade X students in the computer and network engineering department at SMK Negeri 1 Painan. Conducted this research to collect research data related to the development of learning media using flypaper, which will be sought for the level of validity in design development, the level of practicality in use by users, and the level of effectiveness in the influence after the use of learning media in the classroom.

The data collection instruments in this study are 1) Observation, 2) Interview, 3) Questionnaire/questionnaire test, validation and practicality, and 4) Effectiveness questionnaire. Research data analysis using quantitative descriptive analysis techniques obtained through validator questionnaires, teacher response questionnaires, and student response questionnaires to learning media using flypaper in computer and network engineering developed.

RESULTS AND DISCUSSION

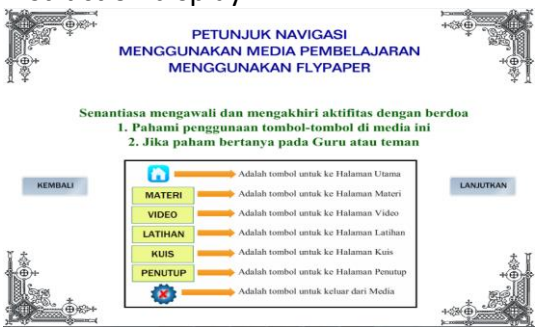
Result

The define stage is carried out as follows: a) Initial observations at SMK Negeri 1 Painan found that so far, more conventional methods have been used, namely using stationery, books, and teacher-centered in supporting the teaching and learning process, b) Interviews with teachers of computer network engineering and telecommunications subjects found that utilizing previous media with computers using PowerPoint slides in the learning process still makes students less enthusiastic in the learning process, c) curriculum analysis at SMK Negeri 1 Painan is known to use the independent curriculum, d) media analysis is known to use flypaper to design and develop a form of interactive media which includes text, images, sound, video, animation and interactive quizzes.

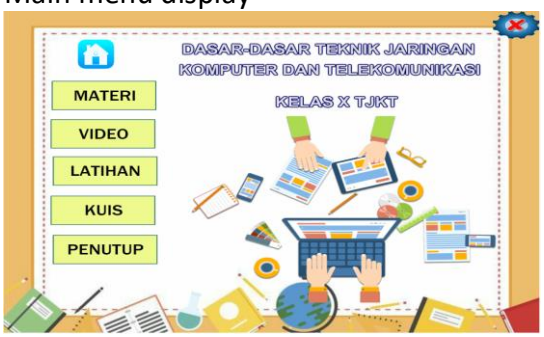
The design stage is produced as follows:

a) Front view

b) Instruction display



c) Main menu display

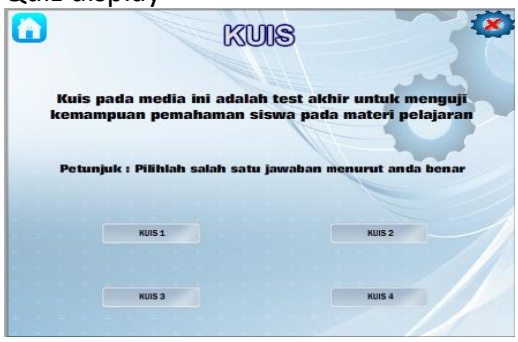


d) Material list display

e) Video list view

f) Exercise display

g) Quiz display



h) Closing display

The development stage (develop) results obtained as follows:

1. Validation stage

Media experts, validated by 2 media experts in the field of vocational education technology, obtained results, namely:

Table 1 Media expert validation results

No	Aspect Validation	Aiken's V	Category
1	Navigation	0.84	Valid
2	Ease	0.88	Valid
3	Display	0.86	Valid
4	Writing (Text)	0.88	Valid
Average		0.86	Valid

Material experts, validated by 2 material experts in the field of vocational education technology, obtained results, namely:

Table 2 Material expert validation results

No	Aspect Validation	Aiken's V	Category
1	Curriculum	0.92	Valid
2	Learning	0.85	Valid
3	Material	0.91	Valid
Average		0.89	Valid

2. Practicality test stage

Teacher response, a practicality response test was carried out to 4 teachers in computer and network engineering.

Table 3 Practicality results of teacher response

No	Assessment Aspect	Average score	Category
1	Technical	93,00	Very Practical
2	Content	91,25	Very Practical

3	Design	90,71	Very Practical
Average		91,65	Very Practical

Student response the practicality response test was carried out on 32 class X computer and network engineering students and obtained very practical results with an average score of 84.94.

3. Effectiveness Test Stage

Classical Completeness, the results of the percentage of the number of students who are complete in learning outcomes is 90,62%. The impact of effect size, based on the number of pretest scores with a total of 32 students; 18 students were complete, and 14 who were not complete, while for the scores from the posttest, there were 29 complete students and 3 students who were not complete. The recapitulation result with a percentage gain score is 94.82%, with a very effective category.

The disseminate stage is carried out by socializing the introduction of media to teachers and students in the basic subjects of computer network engineering and telecommunications in learning outcomes.

Discussion

The results showed that learning media using flypaper is the subject of basics of computer network engineering and telecommunications. The process used the Four-D development model (Define, Design, Develop, and Disseminate).

In the first stage, namely define, a needs analysis is carried out in the form of curriculum needs, students, tasks, and concepts. This stage is carried out as an analysis of learning conditions before development.

The second stage, namely design, is to design learning media using flypaper based on the subject matter by the elements, learning outcomes, materials, and learning objectives in the Basics of Computer Network Engineering and Telecommunications.

Furthermore, the third stage is development; media development using flypaper is based on revisions and suggestions from validators to obtain learning media using flypaper worth testing. The validity, practicality, and effectiveness of learning media using flypaper are tested at this stage.

The fourth stage is disseminated, the stage of disseminating media that has been developed and is ready for research on learning in class X majoring in Computer and Network Engineering, socializing the introduction of media and disseminating learning media using flypaper to TKJ program teachers and students to be used as a learning tool by accessing files or documents that researchers have provided.

The results of the media expert validity analysis are known with an average value of 1) the Navigation aspects average 0.84 "valid," 2) The media convenience aspect averaged 0.88 "valid," 3) The display aspect averaged 0.88 "valid," 4) The writing aspect (text) averaged 0.88 "valid" the overall total average with a value of 0.86. The material experts are known with an average value, namely: 1) The learning aspect averaged 0.78 "valid," 2) The material aspect averaged 0.85 "valid" and obtained an overall average of 0.82 "Valid."

Results of teacher and student response analysis. The results obtained for the teacher's response from the technical aspect were 93, "Very Practical," the content aspect was 91.25, "Very Practical," the design aspect was 90.71, and "Very Practical." From the student's response, the total average result from all aspects was 84.94, "Very Practical."

The results of the pretest-posttest analysis are seen from the average pretest value of 75.97% and the average posttest value of 86.81%. With a total Effect Size value of student learning outcomes of 0.82

in the "Large" category where the learning media using flypaper developed is valid, practical, and effective for use in learning.

CONCLUSION

The research has produced a learning media using flypaper on computer network engineering and telecommunications basics. The contents of the media using flypaper are text, images, and videos developed are .exe so that they can be used anywhere and anytime, either accessed via a desktop computer. The four-D development model uses the process (Define, Design, Develop, and Disseminate).

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