DEVELOPMENT OF E-MODULE LEARNING MEDIA USING ARTICULATE STORYLINE 3 IN COMPUTER SYSTEM SUBJECTS AT SMK ISLAM 1 DURENAN

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Abstract—**This research aims to develop a learning media in the form of an E-MODUL based on Articulate Storyline 3 for the Computer Systems subject for Grade X in the Computer and Network Engineering major at SMK Islam 1 Durenan. The development method used is the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. The needs analysis stage showed that the current learning process was still conventional and lacked interactive learning media. The design phase produced an E-MODULe with an attractive interface, easy navigation, and well-structured content aligned with the Kurikulum Merdeka. Validation by media and subject matter experts showed that the E-MODULe was in the valid category, with an average validation score of 79%. Field trials involving a small group of 5 students and a larger group of 15 students indicated that the E-MODULe was practical and feasible for use, with an average practicality score of 86%. The results suggest that the developed E-MODULe is effective and suitable as an interactive and flexible learning medium for the Computer Systems subject in vocational high schools.**

Keywords: E-MODULe, Computer Systems, Articulate Storyline 3, ADDIE, Interactive Learning Media.

I. INTRODUCTION

Computer System Learning at SMK Islam 1 Durenan still faces challenges in terms of effectiveness and student engagement. Based on observations, the teaching methods used tend to be conventional and lack interactivity, resulting in passive students who struggle to understand abstract and technical material. The media used are typically static presentations, failing to accommodate students' visual learning styles and digital needs.

Research by [1] shows that interactive online learning media can significantly increase students' interest and academic performance, particularly in computer systems material. Additionally, according to [2], the use of interactive e-modules has proven effective in enhancing conceptual understanding by over 90% and is very user-friendly.

Therefore, the development of e-modules based on Articulate Storyline 3 was chosen as a solution to provide engaging, flexible, and interactive learning media. This media is expected to improve the quality of learning, align with the characteristics of vocational high school students, and support more effective self-directed and visual learning.

II. RESEARCH METHODS

A. . *Types of Research*

This study uses the Research and Development (R&D) method, which is a research approach that aims to produce specific products and test their effectiveness in the learning process [3]. The R&D method is considered relevant because it allows for the development of innovative, systematic, and tested learning media to improve the quality of education, especially in Computer Systems material.

The development model used in this study is the ADDIE model (Analysis, Design, Development, Implementation, Evaluation), which consists of five systematic stages. Each stage includes analyzing media and material needs, designing the interface and navigation, creating e-modules using Articulate Storyline 3, implementing them in the classroom, and evaluating them through expert validation and limited testing.

The use of Articulate Storyline 3 in e-module development was chosen because it can present computer system material visually, interactively, and support student learning flexibility. This is supported by research findings [4], which show that developing e-modules on computer system material using the 4-D model can improve students' comprehension scores from 50.45 to 91.74. Additionally, [5] also demonstrates that the use of EPUB-based e-modules significantly improves vocational high school students' learning outcomes in basic programming courses.

Based on observations at SMK Islam 1 Durenan, this learning media was developed to address the need for more interactive materials that align with students' characteristics. The evaluation phase involved validation by subject matter and media experts, as well as limited testing on small and large

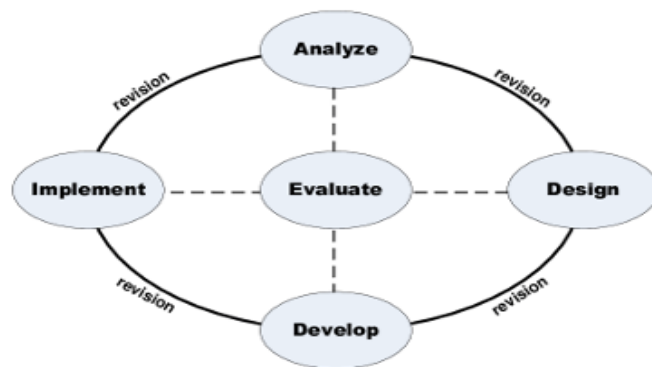groups to ensure the product's feasibility and effectiveness.

Figure 1 MODEL ADDIE

B. *Instrument*

The instruments used include interview guidelines, initial needs questionnaires, validation sheets, and student response questionnaires. Interview guidelines are carried out with teachers to find out the

characteristics of students, subject matter and curriculum used. The initial needs questionnaire is used to obtain information about student characteristics.The validation sheet consists of validation sheets of subject matter experts and media experts whose purpose is to measure the validity of the learning media developed. Student response questionnaires are used to obtain data related to the practicality of the learning media developed.

C. *Procedure*

This study uses a Research and Development (R&D) approach, which is a method that aims to produce specific products and test their effectiveness in an educational context [3]. This model is very suitable for use in the development of learning media because it provides space for researchers to design, test, and evaluate media comprehensively.

The development phase employs the ADDIE model—Analysis, Design, Development, Implementation, and Evaluation—which is believed to support the creation of targeted interactive media. The ADDIE stages have proven effective in improving the quality of learning media. For example, [6] successfully developed Articulate Storyline 3-based learning media using the ADDIE model, with expert validation and practical testing results reaching the highly feasible category (> 96%).

The design phase involves developing the content structure, navigation, and a simple yet engaging media interface. In the development phase, researchers utilize the Articulate Storyline 3 application to create interactive e-modules. This media is designed to enhance student participation and learning motivation through relevant visual displays and easy-to-understand navigation.

The implementation phase was conducted using two trial schemes: a small group consisting of 5 students and a large group of 15 students. Evaluation was conducted both formatively and summatively, including expert validation of the material and media as well as analysis of student learning outcomes. Based on the validation and trial results, the developed media was deemed feasible and effective for use.

D. *Analysis*

- **Needs Analysis**

Proper analysis in the early stages of media development is essential to ensure that the resulting media meets the needs and characteristics of students [5].

Hardware Requirements		
T1.	Prosesor	Intel Core i5 8th
a2.	VGA Card	NVIDIA GeForce MX150 1GB
b3.	RAM	4 GB DDR4
e4.	Hardisk	1 TB
l	**Software Requirements**	
1.	*Articulate storyline 3*	

I

Table II Hardware requirements analysis

Hardware Requirements		
2.	RAM	2 GB
3.	Storage	32 GB
Software Requirements		
1.	OS	*Android 5.0 Lolipo or ios*

E. *Desain stage*

The design stage is a systematic step in designing e-module-based learning media in accordance with the needs of vocational high school students. This design includes mapping teaching materials based on basic computer system competencies, visual designs in the form of interface layouts, and navigation that facilitates access between pages. In addition, evaluation instruments are also developed to assess the suitability of the content, appearance, and functionality of the media.

The content in the e-module is systematically organized based on the curriculum structure and the needs of Grade 10 Computer and Network Technology students at SMK Islam 1 Durenan. All content is designed to be easily understood, supported by a consistent interface design, readable fonts, and relevant illustrations related to the learning topics. The e-module interface includes simple navigation buttons such as "Next," "Back," and "Home" to facilitate user mobility. The assessment instrument is designed as a validation tool for media and material experts to evaluate the quality of the e-module.

[7] shows that the design stages of creating storyboards and wireframes significantly influence the feasibility of digital learning media. Products developed through structured design are deemed suitable for use by students and practical for teachers. This reinforces that proper design planning is a crucial foundation for creating effective and engaging e-modules.

F. *Developmen Stage*

The develop stage in the ADDIE model consists of product design realization activities [8]. At this stage, the process of compiling the product to be developed is carried out by creating Android-based E-MODUL learning media, and the learning media product is created in accordance with the format.

G. Implementation Stage

During the implementation stage, the product will be tested on 10th grade TKJ students who are taking computer systems classes at SMK Islam 1 Durenan. In addition, questionnaires will also be distributed to measure and determine student responses to the E-MODUL learning media.

H. Evaluate Stage

At this stage, researchers made final revisions to the media developed based on feedback obtained from response questionnaires or field notes on the observation sheets of SMK Islam 1 Durenan. The aim was to ensure that the products developed were truly suitable and could be used by the school for a longer period of time.

I. Stage Data Of Colecctiom

Data collection techniques are an important step used by researchers to obtain the information needed to support the development of learning media. These techniques aim to obtain valid and relevant data in accordance with the research objectives.

First, observation is conducted as an effort to directly observe teaching and learning activities taking place at SMK Islam 1 Durenan. Through this observation, researchers can understand the real situation in the classroom, both in terms of the teaching methods used by teachers and the responses and involvement of students during the learning process.

Second, interviews are used as a direct data collection technique through a question-and-answer process between the researcher and relevant informants, such as subject teachers and educational staff. These interviews provide a deeper understanding of the issues, needs, and expectations regarding the learning media to be developed.

Third, questionnaires are used to obtain data indirectly. This technique involves distributing written instruments in the form of structured questions designed to measure the perceptions, responses, or needs of respondents, both teachers and students, regarding the learning media being developed.

In addition to data collection techniques, the existence of data collection instruments is also very important. These instruments serve as tools to assist in the systematic and targeted data collection process. In the context of learning media development, there are at least three main types of instruments used, namely observation sheets, interview guidelines, and assessment questionnaires. All three are designed to accommodate all aspects needed in the process of designing and evaluating the products being developed.

III. RESULTS AND ANALYSIS

This section presents the findings and analysis of the research. The results can be illustrated using images, charts, tables, or other visual aids to enhance the reader's understanding. The Results and Discussion section may be divided into several sub-sections as necessary.

A. System Evalution

This stage is the final step in the prototyping method, which is the evaluation of the system to ensure that the learning media has met quality standards. At this stage, the apps developed with Construct 2 are converted to APK format for use on Android devices, using the Website 2 APK Builder service.

Picture	Curiosity
	➤ Home
	➤ Beranda
	➤ Profil pengemba ng
	➤ Tujuan pembelaja ran

Percentage Results	Criteria
81%-100%	Very Appropriate
61%-80%	Appropriate
41%-60%	Sufficiently Appropriate
21%-40%	Insufficiently Appropriate
<21%	Very Inappropriate

Picture	Curiosity
	➢ Pengertian software
	➢ Fungsi software
	➢ Materi 1
	➢ Materi 2
	➢ Evaluasi

B. Testing

• Media Member 1

In the first stage, media expert 1 gave a rating of 55%, indicating that this media still needs significant improvements, particularly in terms of visuals, navigation, and layout consistency. After revisions were made based on the expert's recommendations, a revalidation was conducted, and the suitability percentage increased to 86%, which falls into the highly suitable category. This indicates that the improvements implemented have successfully enhanced the media's quality in both technical aspects and appearance.

Score obtained	Maximum score
32	36
Result	32
Reach level	Sangat layak

Achievement level $= \frac{F}{N} \times 100\%$

Achievement level $= \frac{32}{36} \times 100\%$

$$= 86\%$$

• Media Member 2

Media expert 2 gave a validation score of 75%, indicating that the media is sufficiently suitable for use, but there are still some areas that can be further developed, such as icon consistency and improvements to navigation to make it more responsive.

Score obtained	Maximum score
27	36
Result	27
Reach level	layak

Achievement level $= \frac{F}{N} \times 100\%$

Achievement level $= \frac{27}{36} \times 100\%$

$$= 75\%$$

• Material expert

Score obtained	Maximum score
32	40
Result	32
Reach level	layak

Achievement level $= \frac{F}{N} \times 100\%$

Achievement level $= \frac{32}{40} \times 100\%$

$$= 76\%$$

The suitability of the content and images used is also an important aspect in the evaluation by subject matter experts. The illustrations displayed are relevant to the content and serve to reinforce students' understanding, especially in the introduction to hardware and computer system flow. Subject matter experts assess that the visuals are able to illustrate the material concretely, thereby helping students understand abstract concepts.

• Product Trial Results

Small group trial

Score obtained	Maximum score
175	200
Result	175
Reach level	Sangat layak

Achievement level $= \frac{F}{N} \times 100\%$

Achievement level $= \frac{175}{200} \times 100\%$

$= 87\%$

A small group trial involving 15 students yielded a result of 87%.

Large group trial

Score obtained	Maximum score
510	200
Result	600
Reach level	Sangat layak

Achievement level $= \frac{F}{N} \times 100\%$

Achievement level $= \frac{510}{600} \times 100\%$

$= 85\%$

A small group trial involving 15 students yielded a result of 85%.

CONCLUSION

Based on the results of the research and development activities that have been conducted, it can be concluded that the interactive E-MODULE learning media based on Articulate Storyline 3 for the Computer Systems subject at SMK Islam 1 Durenan is deemed suitable and effective for use in the learning process.

The development process was carried out through five stages of the ADDIE model, starting with an analysis of student needs and learning conditions, designing an attractive and easily accessible media, developing a multimedia-based E-MODULE with user-friendly navigation, implementing it in the form of small and large group trials, and evaluating it based on validation results by experts and student responses.

During the validation stage, Media Expert 1 gave a score of 55% before revisions and increased to 86% after revisions. Media Expert 2 gave a score of 75%, and the subject matter expert gave a score of 76%. The product trial was conducted in two stages: a small-group trial involving 5 students with a result of 87%, and a large-group trial involving 15 students with a result of 85%. The average result of the small- and large-group trials showed a percentage of 86%, which falls into the "very suitable" category.

The developed E-MODULE was assessed as meeting the indicators of educational media feasibility, namely having an attractive appearance, easy-to-understand navigation between pages, appropriate use of images in line with the material, and supporting readability and flexibility in learning. This E-MODULE was also assessed as capable of supporting self-directed learning and enhancing students' interest and understanding of the Computer Systems material..

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