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Development of Lubrication System Learning Media Based on the Instagram Application

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ABSTRACT

Instructional media serves as a pivotal tool in facilitating interactions between teachers and students. The effective and efficient learning process can be significantly enhanced through the optimal utilization of these media. However, this ideal has not been fully realized in the learning environment of SMK Negeri 7 Baleendah. To address this gap, this study aimed to develop an optimal instructional medium. The 4-D model was employed as the methodological framework for this research. The developed instructional medium underwent rigorous validation by a panel of five media experts and five material experts. Upon successful validation, the medium was disseminated to students for practical application. The results of the study revealed that the developed medium demonstrated high validity, as assessed using the Content Validity Ratio (CVR) and Content Validity Index (CVI). The CVR analysis of the media experts' ratings yielded a perfect score of 1 for all items, indicating strong content validity. Similarly, the CVI analysis produced a score of 1, further confirming the medium's content validity. The material experts' ratings also exhibited high validity, with CVR scores consistently exceeding 0.50 and CVI scores surpassing 0.83. Subsequent dissemination of the medium garnered positive feedback from the student users. The learning media that has been created can be used by teachers and students.

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INTRODUCTION

Learning is something that is always tied to humans from birth to the end of their lives. Learning is an activity or process that aims to increase knowledge, improve skills, and improve behavior (Suyono & Hariyanto, 2016). According to Fadhilah & Maunah (2021), in the early days of life humans (babies/children) will not be able to walk straight away, because they need to learn to walk and also need help from other people. In accordance with this understanding, a child is said to be learning because he is carrying out activities aimed at improving his abilities. The situation that occurs when other people help a small child learn to walk is called learning. According to Satria & Putra (2023), the situation where a person acquires new abilities in terms of knowledge, skills and attitudes through interaction with the surrounding environment is called learning.

The learning environment that is commonly known to everyone is learning at school. The learning process at school involves teachers and students. Learning that occurs between teachers and students requires an intermediary called learning media. The purpose of using learning media is to make learning effective and efficient (Hasan et al., 2021). Learning media is anything to be an intermediary or liaison from the information provider, namely educators, to the information recipient, namely students, so that they are motivated to learn so that their learning can be useful (Hasan et al., 2021). The use of learning media needs to be used to clarify the material to be delivered so that it is not too verbal, overcome limitations, and provide stimulation so that students are interested in learning so that the learning that takes place is effective and efficient. Teachers can use the best learning media according to Edgar Dale's theory.

Based on Edgar Dale's cone of experience, conducting simulations and doing real things are the best learning experiences that students can get. However, not all subjects can easily simulate the material being studied. The lubrication system is one of the subjects that will be studied by SMK students majoring in Motorcycle Business Engineering class 11. Ideally, according to Edgar Dale's theory, it is to present a lubrication system simulator. Motorcycle engines must be transparent because lubricating oil is one of the important components of the lubrication system which is a moving component. The movement of lubricating oil must be visible to students so that they understand the function and purpose of the lubrication system. Presenting such a simulator will be difficult because it requires replacing motorcycle engine materials and requires a large amount so it is not efficient.

An alternative solution for using learning media is to watch animations. Students can see the flow of the lubrication system because the animation will present the movement of lubricating oil in the lubrication system. However, the teacher who taught only used book media, which caused abstraction in students. The author knows this because he has completed the Professional Education Strengthening Program (P3K) in the period from September 2023 to December 2023. The author carried out P3K at SMK Negeri 7 Baleendah. The author wants to create learning media that uses animations that are more effective than the learning media used by the teacher, which is only reading books and is more efficient than system simulators so that this can improve the learning experience of students.

The variation that is currently trending in the use of learning media is social media (Adiasti, 2021). Furthermore, according to Adiasti (2021), social media is currently very close to students. For example, from waking up to going back to sleep, students will not be separated from using social media. This is what makes the author interested in using social media as a medium in learning class 11 lubrication system material. Some of the social media that currently exist are 3 Facebook, Twitter, Line, Whatsapp, TikTok and Instagram. Of all the existing social media, Instagram, TikTok, and Whastapp are social media that are used by class 11 students at SMK 7 Baleendah.

Previous research conducted by Rahman et al (2023) entitled "Utilization of Social Media as a Learning Medium" produced research stating that the use of social media as a learning medium can

attract students' attention so that learning is more effective. Furthermore, research from Mufidah & Mufidah (2021) entitled "Tik-Tok and Instagram Applications as an Alternative in Learning Media" states that the Tik-Tok and Instagram applications can be used as learning media that make learning interactive.

Seeing previous research that says that learning media can use social media, the author wants to create learning media that uses social media. The author uses Instagram social media because it is the latest research in the research location and also because Instagram is worthy of being used as a learning medium. The existing background stimulates the author to create a learning media for a lubrication system based on the Instagram application. The research entitled "Development Of Lubrication System Learning Media Based On The Instagram Application" is expected to be able to solve several obstacles in learning and is worthy of use after being validated by media experts and material experts.

METHOD (11 pt)

The 4D model is the model used by the author to conduct the research. The selection of the 4D model was due to the stages used in accordance with the research objectives, namely the creation of learning media for lubrication systems based on the Instagram application. The stages that are passed are also not too complex so that the time needed to develop this learning media is short (Maydiantoro, 2020). The following are details of the development stages that are passed:

a) Define
- Front-end Analysis (Analisa Awal)
- Learner Analysis
- Task Analysis
- Concept Analysis
- Specifying Instructional Objectives

b) Design
- Media selection
- Format Selection
- Initial Design

c) Development

d) Disseminate

Participants in this study were five media experts as validators of learning media, and five material experts as validators of material in the learning media created. The population selected in this study were students majoring in Motorcycle Engineering, class XI of SMK Negeri 7 Baleendah located at Jl. Siliwangi KM. 15 Kec. Baleendah, Kab. Bandung, West Java 40381. The total population was 105 people. Descriptive research uses a sample of at least 10% of the population. The sample of 15 people must have the characteristics considered by the author. The author wants to take a sample that has an

Instagram account as a requirement. This technique is called purposive sampling because determining the sample requires certain considerations.

Research instruments are needed in a study. Research instruments are used by researchers to find out information about their research (Hidayat, 2021). This study used a questionnaire as a research instrument given to media experts and material experts. Meanwhile, the user response questionnaire was aimed at students to find out their responses/responses to the learning media created.

Validation data was collected through questionnaire distribution. The data that has been collected is useful for determining the feasibility of the learning media that has been created. The assessment of the feasibility of media and materials from selected experts uses the Guttman scale. The selection of the Guttman scale was carried out by the author because he wanted to get a firm answer to a problem that was asked (Sugiyono, 2022). The Guttman scale consists of two answers, namely "yes-no", "true-false", "ever-never". If you answer yes, you will be given a score of "1" if not, you will be given a score of "0". The validity calculation uses a formula developed by Lawshe known as the Content Validity Ratio (CVR) (Susetyo, 2015). Lawshe's formula is:

$$CVR = \frac{2n_e}{n} - 1$$

CVR = Content Validity Ratio

n_e = Number of experts who say it is important

N = Number of expert assessments

The item is declared valid if the CVR index is positive and if it is negative it is declared invalid because the CVR ratio is 0 = 0.50. The item is declared to have met content validity if there is a match between the assessors above 0.50. Content Validity Ratio is a way to measure the validity of each question item. To measure overall validity is called using the CVI (Content Validity Index) approach. Content is declared valid if it has a value above 0.83. The calculation of CVI is to calculate the average results of all CVRs (Puspitasari & Febrinita, 2021).

RESULTS AND DISCUSSION

Result

The data obtained from this study are the results of assessments by media experts, material experts, and student responses. This study uses the 4D mode (define, design, develop, disseminate) developed by Thiagarajan & Sivasailam (1974)This model has 4 stages, namely the definition stage, the design stage, the development stage, and the dissemination stage. This study will produce a learning media based on the Instagram application. The stages of manufacture will be described in detail as follows.

a) Define

- Initial Analysis of this research is the teacher who uses the lowest level of learning media according to Edgar Dale's cone of learning experience. The media used is only visual media. Teachers must

use better media, namely media with audio visuals so that the learning experienced by students is more effective.

- Student Analysis conducted further analysis from the initial analysis and found that today's students use social media in their daily activities. The social media used is Instagram. Instagram social media is a media that contains photos and videos. Photos and videos are a combination of audio and visual media. According to (Uswatun Fadilah, 2019) learning styles that involve audio and visuals can give students a greater sense of desire to learn, making students achieve learning goals faster.
- Task Analysis is carried out on students during learning by understanding the function and workings of the motorcycle lubrication system.
- Concept Analysis is done through the creation of this learning media with the concept that the learning media will be in the form of videos and photos. The purpose of selecting the media is because we want to increase the level of media according to Edgar Dale's theory where teachers still use the lowest level, which is only visuals from books. The author took the animated video from the YouTube platform.
- Formulation of Learning Objectives of the lubrication system is that students can understand the function and workings of the lubrication system on a motorcycle engine. At the end of phase F, students are able to diagnose disturbances or damage to Motorcycle Engines including Main Engine Components, Lubrication System, Cooling System, Fuel System, Exhaust Gas and take appropriate action in overcoming disturbances or damage as a whole on various types and brands of Motorcycles.

b) Design

The next stage of 4D research design is design. This stage is the design stage for the learning media that will be created. The stages carried out are as follows.

- Determining the content of learning media the content of learning media must be in accordance with learning objectives. The lubrication system material that will be taught must meet these objectives. The topic of discussion is the function of the lubrication system in the engine, and how the lubrication system works in the engine. The videos used as learning media come from the YouTube accounts Lubrizol360 and Maulana R.
- Making a video script A video script is needed to make it easier to produce media. The purpose of the script is as a reference that will later become the appearance of a media.
- The image that will be displayed is the content of the lubrication system material. The application used to help researchers is Canva. The initial display is as follows.

c) Development

The learning media that has been created will then be tested for its feasibility by media experts and material experts. The results of expert testing of the Instagram-based lubrication system learning media are the basis for making improvements before being used by students.

The learning media that has been created is then assessed by an expert to determine eligibility. This validation was carried out by two lecturers as material experts and two lecturers as media experts. Three teachers from the school also became media experts and material experts. The total number of material expert assessors is five and media experts are five. As for the assessment of feasibility results as follows.

Table 1. Assessment Feasibility Results

No	Aspect	Score – Expert					CVR Score	Explanation	CVI Score	Explanation
		1	2	3	4	5				
1	Visual	1	1	1	1	1	1	Good	1	Good
2		1	1	1	1	1	1	Good		
3		1	1	1	1	1	1	Good		
4		1	1	1	1	1	1	Good		
5		1	1	1	1	1	1	Good		
6		1	1	1	1	1	1	Good		
7	Audio	1	1	1	1	1	1	Good		
8		1	1	1	1	1	1	Good		
9		1	1	1	1	1	1	Good		
10	Time	1	1	1	1	1	1	Good		
11		1	1	1	1	1	1	Good		
12	Quality	1	1	1	1	1	1	Good		
13	Content	1	1	1	1	1	1	Good		

Media expert assessment of learning media was declared feasible without revision by four experts and feasible with revision by one expert. The results of comments and suggestions can be seen in Table 2 below.

Table 2. Expert's Comments and Suggestions

No	**Comment**
1	Add creator and mentor profiles along with their competencies
2	Gradually displays text accompanied by sound
3	Writing video sources
4	Adding learning objectives
5	Add some evaluation questions according to the level of learning objectives

The assessment of material experts on learning media was declared feasible without revision by three experts and feasible with revision by two experts. The following validation results, comments, and suggestions can be seen in Table 3 below.

Table 3. Assessment of Material

No	Aspect	Expert Score					CVR Score	Explanation	CVI Score	Explanation
		1	2	3	4	5				
1	Materi	0	1	1	1	1	0,60	Good	0,83	Good
2		0	1	1	1	1	0,60	Good		
3	Ilustration	1	1	1	1	1	1	Good		
4		1	1	1	1	1	1	Good		
5	Media	1	1	1	1	1	1	Good		
6	Quality	0	1	1	1	1	0,60	Good		
7	Attractiveness	1	1	1	1	1	1	Good		

Table 4. Comments from Experts on Assessment of Materials

No	Comment
1	Add more material to the learning media
2	Add lubrication system schematic

d) Disseminate

Learning media that has been validated by media experts and material experts will then be distributed. The purpose of distribution is to find out the response of prospective users to the use of learning media based on the Instagram application. The distribution stage is the last stage in this study. The author determines students of SMKN 7 Baleendah as the target of distribution.

Table 4. CVR and CVI Score Results

No	Number of Experts Who Say It's Important (n_e)	Number of Expert Assessments (n)	*CVR* Score	Explanation	CVI Score	Explanation
1	30	30	1	Good	Good	Good
2	30	30	1	Good		
3	30	30	1	Good		
4	30	30	1	Good		
5	30	30	1	Good		
6	30	30	1	Good		
7	30	30	1	Good		
8	30	30	1	Good		
9	30	30	1	Good		
10	30	30	1	Good		
11	30	30	1	Good		
12	30	30	1	Good		
13	30	30	1	Good		
14	30	30	1	Good		
15	30	30	1	Good		

Disscusion

The creation of learning media for the lubrication system based on the Instagram application aims to understand the process of creating learning media and evaluating the feasibility and response of users, especially students of class 11 TBSM at SMK Negeri 7 Baleendah. The process of creating learning media is carried out by applying the 4-D model research design (Define, Design, Develop, Disseminate). The 4-D model was proposed by Thiagarajan (1974), dividing the development process into four stages, namely, defining, designing, developing, and disseminating. However, in the context of this study, the dissemination stage is not the main objective of the study.

a) *Define*

The initial stage in the 4-D model is definition. The purpose of this stage is to determine the initial needs that will be used as a reference for creating a product. Based on the author's experience during P3K, there is learning media with the lowest level used by teachers when teaching. This will cause learning to be ineffective and inefficient. Teachers as facilitators in learning must optimize students to achieve learning goals effectively (Ubabuddin, 2019). Furthermore, according to Ubabudin (2019), the method is the use of learning media. The better the level of learning media, the more effective & efficient learning will be. Learning media does not have to be used in the classroom only, but it is better if it can be used outside the classroom. This allows students to study again at home or when not at school.

Learning media is an important component in the learning process. The use of learning media is a part that must be considered by teachers as facilitators in learning. Learning media can use the latest technology. The technology that can currently be used is social media which is a need for today's generation of students. Social media is a platform in the form of text, images, videos that are related online. Therefore, the use of social media as a learning medium can make learning effective because it is flexible in including teaching materials and efficient because it can be opened anywhere and is not easily lost or damaged.

b) *Design*

The second stage is designing learning media. After defining, the next step is to make a product, namely a learning media for a lubrication system based on the Instagram application. The learning media needed must be interesting and not abstract so that this media consists of photos and videos. The tool used to design the product is Canva software. The photo contains material taken from Julius Jama's book entitled Motorcycle Engineering Volume III. The book is a book used by teachers in learning. Furthermore, the video used was taken from the YouTube accounts Lubrizol360 and Maulana R. The video displays moving images called animation. The author added his own voice because there was no sound in the video to help explain. After all the learning media materials had been edited, the author had created an Instagram account with the name calon.gr.otomotif.

c) *Development*

The development stage is the validation stage from media experts and material experts. The author has validated and there are several revisions from experts. The Instagram-based lubrication system learning media has been said to be feasible based on CVR & CVI calculations. This feasibility is also in accordance with the characteristics of learning media stated by Gerlach & Ely (in Hasan et al., 2021). The characteristics of learning media are fixative, manipulative, and distributive. This learning media has fulfilled the fixative characteristics because this media can be used at any time. The second characteristic is the manipulative characteristic. This media has fulfilled the manipulative characteristics because it can present illustrations that are in accordance with the original conditions. Five material experts also assessed the illustration aspects on the expert judgment sheet properly. The third characteristic is the distributive characteristic, namely that it can be presented to students at the same time so that the experience received by students is the same regarding the incident.

d) *Dissemination*

The last stage is distribution. Distribution was carried out to students of SMKN 7 Baleendah from class 11 TBSM 1 to 11 TBSM 3. Each class was taken by 10 people. In accordance with the results of the questionnaire that had been distributed, 30 people who were asked for user responses produced data that the Instagram-based lubrication system learning media was feasible to use. According to Thiagarajan (1974), a product is declared feasible to use if the results of the feasibility calculation are positive. Therefore, the result of making this Instagram-based learning media is that the learning media is feasible to use in learning.

CONCLUSION

Based on the discussion that has been explained previously, the following conclusions can be drawn:

1) An Instagram application-based lubrication system learning media has been produced. The contents of the learning media are 3 explanatory videos about the movement of lubricating oil in the engine and 3 explanatory images about the lubrication system (function, components, and lubricating oil).
2) The resulting learning media received a decent assessment from media experts.
3) The resulting learning media received a decent assessment from material experts.
4) The learning media received a positive response from users.

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