Development of "Concrete Work Practice" Learning Media by Using the Addie Model

Syafiatun Siregar[1,*] Harun Sitompul[1,] Kinanti Wijaya[1,] Sempurna Perangin-angin[1,]

Nono Sebayang[1]

[1] *Faculty of Engineering, Universitas Negeri Medan, Jl. Willem Iskandar, Medan, Indonesia*
[*]*Corresponding author. Email: syafiatunsiregar@unimed.ac.id*

ABSTRACT

This study aims to: (1) develop learning media for concrete work practices, (2) determine the validity level of the learning media developed as learning media for students. This study uses the ADDIE development model. The learning media developed consisted of practical stages from beginning to end of a simple civilian building. The development of learning media is developed using the ADDIE model consisting of (1) Analyze which includes needs analysis, curriculum analysis, and character analysis of students, (2) Design, namely by conducting material preparation, media selection, format selection, and initial design of media creation, (3) Development includes module feasibility testing by material experts, media experts, and linguists (4) Implementation or the trial phase with 15 students as participants, (5) Evaluation by analyzing instrument/ questionnaire data that has been assessed by experts and users. The results of the development of learning media in the form of learning videos based on the average validation results are a) The result of validation by media experts with an average score of 4.17 is in the 'Good' category (b) The result of validation by material experts with a score of 4.56 is in the 'Very Good' category (c) The results of validation by linguists with an average score of 4.66 is in the 'Very Good' category. (d) the result of the product trial showed an average score of 4.64 which is in the 'Very good' category. So, the learning media in the form of learning videos are considered good and very good and are suitable for use.

Keywords: Concrete work practice, Media, Addie Model.

1. INTRODUCTION

Development of student skills through practice in developing a repertoire of knowledge provides recommendations for improving the quality of institutions and educational units by upholding integrity, character, and being able to adapt to changes in the global environment [1]. The accuracy in selecting the relevant management and learning strategies is expected to accelerate the achievement of the vision and mission objectives of the study program. The ability of lecturers in implementing learning is based on determining the learning success achieved by students. The role of the lecturer as a motivator, facilitator, and various other roles in achieving learning goals will have an impact on the desired achievement of a particular competency unit [2]. In this case, the way students process information given by the lecturer varies greatly according to the maturity level of the student's thinking power itself, and this greatly affects the learning outcomes to be achieved.

Learning media is a unit of work in a course that is for all intents and purposes independent and a strategy for instructing that depends on the structure and information in discrete units [3]. The quality of undergraduate education graduates is described in two criteria, namely quality according to school size or in-school success standards and quality based on the community standards or requirements for success outside of the classroom [4]. The first criterion considers student effectiveness in achieving curricular demands that are relevant to the workplace. While the second criterion includes the success of skilled students in the ability to work under national or international learning outcomes standards after they actually enter the work force [5]. Additionally, the learning atmosphere is a characteristic that describes the general organizational trends toward the acceptance

of new ideas and thinking at all levels of management. [6]

Concrete Work Practice (CWP) is a basic course that provides knowledge and skills to students on how to create a building that will be significant in the world of civil engineering work [2]. Based on observations made in the CWP learning process, it can be seen that: (1) lecturers needed an appropriate learning model in the learning process so that learning is more effective. Previously, the learning model was still carried out conventionally (lectures, questions, and answers, discussions, exercises/assignments), with the addition of field practice. Students practiced without any guidance, be it books, modules, or learning videos. Learning like this made lecturers dominate learning activities and created limited space for students to learn by themselves, (2) Students considered lecturers as the only source of information so that learning activities only prioritized cognitive aspects, without paying attention to the affective and psychological aspects of students. Students tended to keep all the difficulties encountered within themselves while studying, without any effort to solve them. While studying, students generally tended to be passive and pretended to have understood what had been taught, (3) Learning time in the laboratory was limited, making the lecturers only pursue the course target so that the material presented was completed on time. The students were then given assignments as homework. Furthermore, interviews were conducted with several students with the following results: (1) in the CWP learning process there were still many students who were not able to distinguish concrete stone tools and practice materials, and even some students were not able to identify concrete stone tools and materials. The material presented was only in the form of lectures from the lecturer and was still conventional without media that can attract students' interest to learn, (2) The conventional learning model without using any media was monotonous so that the learning was centered in lecturers which is contrary to the curriculum that has been implemented which is student-centered learning [7]. Student learning outcomes were still low (Figure 1). From Fgure 1 it can be seen that 61.75% are competent (quite competent, competent, and very competent) and 31.25 are not competent. This shows that the learning outcomes achieved have not reached the minimum completeness criteria, namely 75%.
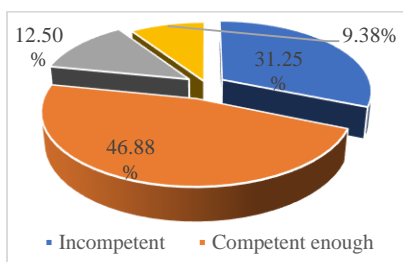

Figure 1. Spread of students' learning outcomes.

The research objectives are: (1) developing concrete learning media for the Concrete Work Practice (2) determining the validity of the learning media developed (3) determining the validity of the use of the module by users.

2. LITERATIRE REVIEW

2.1. Learning Media

In general, learning media is a teaching and learning tool. According to Hujair [8], Learning media is described as a tool or assistance in education that serves as an intermediate in the learning process to improve effectiveness and efficiency in meeting learning objectives. Nasution [9] describes the learning functions as follows: (1) the function of being a learning resource, (2) semantic functions, (3) manipulative functions, (4) psychological functions, and (5) socio-cultural functions. According to Briggs [1] learning media is the physical means to deliver content/learning items such as books, movies, videos and so on.

2.2. Video Tutorials

Tutorials [8] are (1) class tutoring by a teacher (tutor) for a student or a small group of students through video media, (2) additional teaching through tutors. Whereas a tutor is defined as: (1) a person who gives lessons to a person or a small number of students (at home, not at school) or (2) a lecturer who guides several students in their lessons. The learning module is a packet of teaching materials consisting of behavioral objectives, a sequence of activities and provisions for evaluation. According to Andi Prastowo [10], the objectives of media preparation include: (1) So that students can learn independently without or with the guidance of educators, (2) So that the role of educators is not too dominant, (3) cultivating students' honesty, (4) accommodating different levels and learning speeds of students, and (5) so that students can measure their own proficiency by themselves.

3. METHOD

The ADDIE model is an instructional design methodology used to help organize and streamline the production of a course content [11]. The ADDIE model stands for Analyze, Design, Develop, Implement, and Evaluate. Instructors discover this methodology exceptionally valuable on the grounds that having stages with obvious characteristics encourages usage of compelling train of thought in development of an instruction. As a model, Addie Model has discovered wide acknowledgment and use [9].

3.1. Analysis

The step of analysis might be thought of as the 'Objective Setting Stage'. In this stage, media creator focuses on the learners, i.e. who the media is for.

Additionally, this is when the program observes how proficient each understudy/member is. This is to make sure that the themes they already know will not appear again in the developed media. As such, the media will focus on exercise and themes the learners still can't seem to learn. In this stage, educators recognize what the understudies have already known prior to the course and what they are expected to know after the course [12].

3.2. Design

This stage determines all goals, instruments used to measure, different tests, topic investigation, arrangement, and assets.

3.3. Development

The Development stage begins with the creation and testing of the task's strategy. The information obtained in the previous two phases is used to create a program that will give the learning instructions in this stage. While the previous stages required arranging and conceptualizing, the Development stage is concerned with applying it in to a physical form. This stage consists of three tasks, to be specific drafting, creation, and assessment.

3.4. Implementation

The implementation stage consists of trials and adjustments to the learning media to ensure that the developed media is accurate and effective. It is in this stage that designers endeavor to revise and update the course to guarantee that the learning material is conveyed adequately. Researchers and understudies cooperate to prepare on new apparatuses so the developed media can be continuously assessed for additional improvement

3.5. Evaluation

The ADDIE technique's final phase is Evaluation. This is the stage in which the task is subjected to meticulous final testing in terms of the what, how, why, and when of the items that were nurtured (or not) throughout the research process. This stage is divided into two parts: Formative and Summative Evaluations. The formative stage happens prior to the program's development, while the Summative part occurs toward the end of the program. The primary objective of this stage is to determine whether the objectives have been met and to gather what will be required to increase the productivity and achievement pace of the institution using the media.

4. DATA ANALYSIS TECHNIQUE

The data analysis techniques used were: (1) Test the validity of the questionnaire; In this study, the questionnaire validity test used the expert judgment method which would later be validated by the questionnaire experts (2) test the validity of the learning media; The instrument will be used to measure the value

of the variable to be studied. A Likert scale with five answer variations is the scale used in this study. The Likert scale was chosen because it can measure a person's attitudes, reactions, opinions, and perceptions of something. Each answer from the respondent was converted into numbers for later analysis. After that, the average score is converted into a value on a scale of 5 using references from Daryanto [5].

Table 1. Assessment criteria

No	Criteria	Score	
		Formula	Calculation
1	Very good	$X > M_i + 1.8 \, Sd_i$	$X > 4.2$
2	Good	$M_i + 0.6 \, Sd_i < X < M_i + 1.8 \, Sd_i$	$3.4 < X < 4.2$
3	Acceptable	$M_i - 0.6 \, Sd_i < X < M_i + 0.6 \, Sd_i$	$2.6 < X < 3.4$
4	Not Good	$M_i - 1.8 \, Sd_i < X < M_i - 0.6 \, Sd_i$	$1.8 < X < 2.6$
5	Bad	$X < M_i - 1.8 \, Sd_i$	$X < 1.8$

M_i = midrange = ½ (maximum score + minimum score)
Sd = Standard deviation = 1/6 (maximum score + minimum score)
X = average score of questionnaire result

Table 1 shows the assessment criteria used in this study. The result from questionnaires are averaged from the total score and compared to the criteria.

5. RESULT AND DISCUSSION

The following are the findings of a study using the ADDIE approach to generate video tutorial media.

5.1. Analysis

The analysis stage was carried out through the following stages: (1) Needs analysis; (2) Curriculum Analysis; (3) Student Character Analysis. The results of the observation showed that students were very active in learning, all students had normal physical conditions to receive the information given by the lecturer well. The variety in learning movement made by utilizing specific media and an instructional plan is considered as a push to amplify the class sources to establish a pleasant learning climate [11].

5.1.1. Needs Analysis

Based on the results of interviews and observations with students and lecturers who teach the subjects, it was concluded that there was a need for learning resources for the subject of stone and concrete work practices, namely learning videos. The learning videos were prepared by the SLP (Semester Learning Plan).

5.1.2. Students Character Analysis

Student characteristic analysis was conducted to determine the characteristics of students in learning. The results of the observation show that students were students who are active in learning, all students have normal physical conditions to receive the omfpr,atopm given by the teacher well.

5.2. Design

The design stage is carried out in four stages: (1) Preparation of practical material (2) Media selection, (3) Format selection, (4) Initial design. According Mendoza that video as one of the learning media is the best media to attract students to enjoy learning the material presented. [13].

5.3. Development

The development stage consisted of 3 development steps, namely product manufacture, product feasibility validation, and product revision. The product manufacturing stage is the stage of realizing the product according to the design. The process of making the product took 1 month to complete the materials in the media, starting from the searching of materials, typing the material, editing, to setting the media layout. The product validation stage is to validate the instrument on the validity of the media. After the instrument validity was obtained, then it was validated with expert validity. The third stage is product revision. The product that had been validated by media experts, material experts, and linguists was then improved according to comments and suggestions from experts. The results of this revision will then be used at the implementation stage or product testing. Table 2 shows the assessment criteria carried out in the study. The evaluation criteria are taken from the expert judgment to see the feasibility of the media being developed. The aspects that are assessed by the expert assessment are adjusted to the criteria to be assessed. The number of aspects assessed also varies so that it is hoped that the value will be appropriate to the researchmethod.

Table 2. Assessment criteria

No	Expert judgment	Aspect	Number of grains
A	Material Expert	1. Format	4
		2. Organization	9
		3. Attraction	5
		4. The shape and size of the letter	5
		5. Space (blank space)	6
		6. Consistency	8
B	Media Expert	1. Self instruction	26
		2. Self contained	3
		3. Stand alone	2
		4. Adaptive	2
		5. Use friendly	4
C	Linguist	1. Straightforward	3
		2. Communicative and interactive	2
		3. Suitability with student development	2
		4. Compliance with language rules	2
		5. Use of terms, symbols or icons	2
D	User	1. Media	7
		2. Theory	3
		3. Language	2
		4. Learning media	11
		Total	106

Table 3. Media expert validation

No.	Aspect	Number of Grain	Score (x)	Mean	(%)
1	Format	4	18	4.50	90.00
2	Organization	9	38	4.22	84.44
3	Attraction	5	20	4.00	80.00
4	The shape and size of the letter	6	25	4.17	83.33
5	Space (blank space)	5	20	4.00	80.00
6	Consistency	8	33	4.13	82.50
Total		37	154	4.17	83.38

The results of the media expert's evaluation are shown in Table 3. A Likert Scale was utilized in the evaluation, with a maximum score of 5 and a minimum value of 1. Furthermore, the average score obtained was analyzed against the assessment criteria. Based on the overall media assessment criteria, average score of 4.17 is in the 'Good' category

Table 4. Material Expert Validation

No	Aspect	Number of Grain	Score (x)	Mean	%
1	Self instruction	4	18	4.50	90.00
2	Self contained	9	38	4.22	84.44
3	Stand alone	5	20	4.00	80.00
4	Adaptive	6	25	4.17	83.33
5	Use friendly	5	20	4.00	80.00
	Total	37	163.67	4.56	91.11

The material expert's assessment results are shown in Table 4. The test used a five-point Likert scale, with five being the best and one being the worst. Furthermore, the average score obtained is analyzed against the assessment criteria. Based on the overall material assessment criteria with a mean score of 4.56, it is in the Very Good' category.

Table 5. Linguist validation

No.	Aspect	Number of Grain	Score (x)	Mean	(%)
1	Straightforward	3	13	4.33	86.66
2	Communicative and interactive	2	5	5.00	100.00
3	Suitability with student development	2	10	5.00	100.00
4	Compliance with language rules	2	8	4.00	80.00
5	Use of terms, symbols or icons	2	10	5.00	100.00
Total		10	46	4.66	93.33

Table 5 above shows the results of the linguist assessment. The test uses a five-point Likert scale, with five being the highest and one being the lowest. Furthermore, the average score obtained is analyzed against the assessment criteriaBased on the overall language assessment criteria with a score (x) of 46, including the category 'Very Good

5.4. Implementation

The product which have been revised are trialed to 15 participants online. This trial took place on Monday and Tuesday, May 20-21, 2021

5.5. Evaluation

Following the trials, participants were asked to evaluate the learning media. Product trials were carried out in the following steps: sharing videos through the YouTube channel, conveying the aims and objectives of the research, asking students to observe the entire video, sharing user questionnaires through Google Form, asking students to rate the module, and thanking them for their willingness to take part in the product trial.

Table 6. Product trial result

No.	Aspect	Number of Grain	Score (x)	Mean	(%)
1	Media	7	32.93	4.70	94.08
2	Theory	3	13.93	4.64	92.86
3	Language	2	9.40	4.70	94
4	Learning media	13	58.87	4.53	90.67
Total		25	115.13	4.64	92.90

Table 6 shows the results of the product trial result assessment. The test uses a five-point Likert scale, with five being the highest and one being the lowest. Furthermore, the average score obtained was analyzed against the assessment criteria. Based on the overall user assessment criteria with an average score 4.64, it was considered 'Very Good'.

From the results of these studies, overall, the developed learning media in the form of instructional films fell into the good and very good category, making them suitable for use.

6. CONCLUSION

The following conclusions can be derived based on the findings of the R and D (research and development) of concrete stone practice learning media where the ADDIE approach, which includes five stages, was used to produce learning media. (a) Analyze, which involves student character analysis, curriculum analysis, and needs analysis, (b) Design, by conducting material preparation, media selection, format selection, and initial design (c) Development involve material specialists, media experts, and linguistics in module feasibility testing (d) Implementation or the trial phase followed by 15 students, (e) Evaluation by analyzing instrument/questionnaire data that has been assessed by experts and users. Based on the average validation results, the practicality of learning media in the form of learning videos, namely: (a) The results of media experts' validation with a score of 4.17 in the 'Good' level (b) The results of validation by material experts with a score of 4.56 in the 'Very Good' level. (c) The results of the validation by linguists with a score of 4.66 in the 'Very Good' level. (d) the result of the product trial with score of 4.64 is in 'Very Good' level.

As per theoretical and learning media suggestions, this investigation has fundamentally contributed while giving another expansion in the field of key administration of information, learning media as key go between and mindfulness about 'concrete work practice' [6]. In addition, The study's practical consequences demonstrate that learning media plays a significant influence in learning., especially in the practice carried out during the Covid 19 pandemic. The role of learning media greatly helps students in implicating field practice.

ACKNOWLEDGMENT

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