

APPLICATION OF THE ADDIE MODEL IN DESIGNING DIGITAL TEACHING MATERIALS

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Abstract. Teaching materials are one of the important components in the learning process. The right teaching materials must support the smooth running of learning activities. The use of teaching materials needs to be adjusted to the conditions and characteristics of students. In designing or developing teaching materials, it requires an appropriate development model to ensure the quality of teaching materials and support the learning process. The ADDIE model can develop teaching materials according to the needs of students with the first stage of analysis, design, develop, implement, and end with Evaluate whose stages are equipped with revision activities first. This model can be used to develop digital teaching materials. This article aims to find out the role of the ADDIE model in designing digital teaching materials. The benefits of this research are to provide an understanding of the application of the ADDIE model in designing teaching materials, especially digital teaching materials. It is hoped that this research can be useful for all relevant parties, especially education stakeholders. This research uses the method of literature study or literature review by analyzing, collecting data from scientific articles related to research topics and problems. The results showed that the application of the ADDIE model can help in designing and compiling good and effective digital teaching materials for use in the learning process and addie steps are more systematic to be applied.

Keywords: Teaching Materials, Teaching Material Development, ADDIE Model.

I. INTRODUCTION

Science and technology are developing very rapidly. These technological advances can be utilized in Education. Education needs to be formed to be able to face the challenges of the development of science and technology [1]. The emergence of industry 4.0 seeks to implement education to be able to apply technology in the learning process so that students will be able to use technology that supports abilities in the future. In that case, according to Eva [2] the education system implements 21st Century learning which is related to the development and use of technology. One of the things that affects the learning process is the use of teaching materials.

Teaching materials are a device that teachers must prepare before learning. According to Aisyah [3] teaching materials are an important part in the implementation of learning, through teaching materials teachers will be easier in providing material to students and making it easier for students to learn. Teaching materials need to be arranged systematically so that students can learn independently. Magdalena [4] revealed that the nature of making teaching materials must pay attention to the needs or scope of the material to be presented and adapted to the characteristics of the learners. Teaching materials provide smoothness in the learning process because it contains an overview of the activities that will be carried out during learning. This was strengthened by Seruni [5] besides that Rezeqi [6] also revealed that teaching materials provide smooth learning for students.

All forms of materials that are systematically composed that are able to support learning activities can be said to be teaching materials. There are various types of teaching materials, according to Onajite [7] and Wiguna [8] also revealed that there are two types of teaching materials, namely printed teaching materials and non-printed teaching materials. Printed teaching materials consist of textbooks, handouts, modules, posters, and materials displayed on paper, while

non-printed teaching materials can display images, text and sound simultaneously in the form of radio, images, audio-visual such as films, videos and interactive computer- and web-based teaching materials [9][10][11]. The use of these types of teaching materials can be adjusted to the characteristics, conditions of students and the content of the material you want to convey. Teaching materials should be made as attractive as possible in order to increase the motivation for learners to learn. Thus, in learning, students need to get teaching materials that are in accordance with current conditions. The ability to develop and design teaching materials must be possessed by teachers so that the implementation of learning becomes more optimal

Teaching materials that students like, especially elementary school students, teaching materials that contain various media such as, images, audio, video with colors and attractive appearance. According to Nuritno [12] this digital teaching is also more optimally used in learning and can increase students' interest in learning. In reality, elementary school students still use a lot of books provided in schools as a learning resource, students do not get varied teaching materials and the material contained in them is not so extensive that many schools need to develop teaching materials.

In line with the research conducted by Riwu [13] students need more interesting digital-based teaching materials so that students do not get tired of learning the material in it and are contextual by developing teaching materials using the ADDIE model. The right teaching materials to use so that students feel interested in learning them are digital teaching materials because they contain text, images, audio, video and various other media. Research conducted by Megawati [14] model ADDIE can produce quality teaching materials that are suitable for students to use.

Similar research was also conducted by Munawar [15] the application of the ADDIE model in designing to develop

digital teaching materials capable of producing excellent teaching materials. The ADDIE model is often used in designing teaching materials such as modules, LKPD, and textbooks. The ADDIE model can also be used to develop digital teaching materials. The development of teaching materials can use the ADDIE model consisting of five steps (Analysis, Design, Development, Implementation and Evaluation). The purpose of this study is to find out how the use of teaching materials in students and to analyze how the application of the ADDIE model in designing digital teaching materials. The benefits of this research are to provide an understanding of the application of the ADDIE model in designing teaching materials, especially digital teaching materials. It is hoped that this research can be useful for all relevant parties, especially education stakeholders.

II. RESEARCH METHODS

The method used in this study is a literature review. Herliandry [16] revealed that kajian pustaka berpurpose describes the main content based on the information obtained. Literature review or literature study according to Syofian [17] is a research design that is useful in collecting data sources related to a topic. The qualitative data analysis technique used uses Miles and Huberman's analytical studies with 3 lanes of methods, namely data reduction, data presentation, and drawing conclusions or verification. According to Risky [18] data reduction means making summaries, determining the core things that matter. Data display (data presentation) pours the obtained data into the form of a description / description. After that, draw what conclusions have been obtained regarding the topic at hand. Based on this exposure, researchers use literature review by analyzing scientific articles from national journals and several international journals as a research method. The stages of the research can be seen in the following figure.

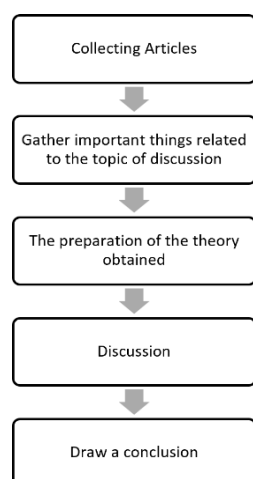


Figure 1. Stages of Research in Literature Review.

III. RESULTS AND DISCUSSION

The quality of the use of teaching materials that has been going on so far still has many problems. Thus the development of teaching materials is very important to continue to be carried out. However, the development of teaching materials needs to be carried out scientifically so that the products developed can be a solution in solving the problem of teaching materials, especially students in the current conditions this. The above problems are in accordance with Asmayanti's research [19] which shows that the existence of teaching materials in schools is not adequate, educators are not yet proficient in compiling teaching materials independently .

Teaching Materials is a product used to assist educators in carrying out teaching and learning activities, teaching materials can be in the form of cetat and non-printed materials. Teaching materials according to Setiadi and Yunita [20] are types of materials (both information, tools, and texts) that are systematically arranged in accordance with competence and the characteristics of the material to be curated, especially by students. Therefore, good teaching materials need to be developed in order to support the learning process to be more optimal.

The development of teaching materials is a set of learning tools or tools that contain material, methods, boundaries, and evaluations . Magdalena [21] explained that the development of teaching materials needs to be systematically arranged with an interesting design until the achievement of the expected goals in accordance with the competencies applicable in schools. The development of teaching materials is needed in today's learning, especially learning activities currently require the use of technology such as the development of digital teaching materials that support the student learning process. In developing Digital teaching materials, one of them can use the ADDIE model (*analyze, design, develop, implement, evaluate*).

The ADDIE model is a concept to develop products such as digital teaching materials, creating products using the ADDIE model process to be one of the most effective tools today. The following steps to design digital teaching materials based on the ADDIE model are as follows [22]:

a) Analysis

The stages of analysis carried out by researchers include three main things, namely needs analysis, curriculum analysis, student character analysis. The following is an explanation of the outline of each analysis to be carried out:

- 1) The needs analysis will be carried out first to analyze the state of digital teaching materials as the main information in learning and the availability of teaching materials that support the implementation of a

learning. The goal is to determine the digital teaching materials to be used whether they are in accordance with the needs of students or not.

- 2) Curriculum Analysis At this stage of curriculum analysis, an analysis of the curriculum used in schools is carried out as a reference to determine KD and to describe indicators of learning achievement according to the provisions of the school.
- 3) Student Character Analysis This analysis is carried out to see the attitude of students towards the learning that we want to make teaching materials. This is important to do so that the development of teaching materials is carried out in accordance with the character of students.

b) Design

The second stage in ADDIE is design. In this stage, it will be done by starting to design digital teaching materials that will be developed according to the results of needs analysis, curriculum analysis, student analysis that has been done previously. Furthermore, the materials needed in digital teaching materials will be determined according to the needs in the field. It then collects references that will be used to develop material in digital teaching materials. Then an instrument is prepared that is prepared by taking into account the aspects of assessing teaching materials, namely aspects of content feasibility, language feasibility, presentation feasibility, and conformity with the learning model used. Instruments prepared in the form of teaching material assessment sheets and response questionnaires

c) Development

Development is the process of turning design into reality. After developing the teaching materials, they will be validated by material expert lecturers and media expert lecturers. In the validation process, validators will use validity instruments that have been created in planning. Validation is carried out to assess the product developed, in the form of content and other parts of teaching materials as needed in the field. Validation is carried out as a benchmark for revision of improvements and improvements to digital teaching material products.

d) Implementation

The fourth stage in the ADDIE stage is implementation, at this stage it is carried out on a limited basis. After the learning is complete, students take a test using the digital teaching material product assessment questionnaire that has been provided. The questionnaire has been prepared according to the indicators of the planned comprehension ability. After conducting the test, the author conducted a data analysis to determine the assessment of the effectiveness of the teaching materials developed. Effectiveness data is obtained from questionnaires filled out by students by calculating the percentage of feasibility of digital teaching material products. After calculating the feasibility of the product,

a preliminary evaluation is carried out to provide feedback on the application of the ADDIE model in designing digital teaching materials. The main objectives of implementation are 1) helping students to achieve learning goals well, 2) Providing solutions to problems faced by students in the process learning, 3) helping students to improve their abilities.

e) Evaluation

At this evaluation stage, researchers make the last revision of teaching materials developed based on input obtained from field notes at the previous implementation stage. This is done so that the teaching materials developed are really appropriate and can be used by wider schools. This last stage is the conclusion of all the stages that are useful to see if all the previous stages have been successful or there are still some that need to be improved again.

The following are listed some research findings related to the Application of the ADDIE Model in Designing Digital Teaching Materials, as follows:

The first finding, research conducted by Widyastuti & Susiana [23] stated that the results of the study showed (1) the process of designing and developing teaching materials followed five steps in the ADDIE model, namely analysis, design, development, implementation and evaluation. (2) The validation results of content experts fall into the category of agree, validation of learning design experts agree, learning media experts agree. The average student questionnaire is included in the good category.

The Second Finding, Is Research conducted by Megawati [24] ADDIE Model Development is often used in the development of teaching materials such as modules, LKS and textbooks, in this study it is also stated that teaching materials in the form of supplements can increase the knowledge and experience of students and educators. Not only that, it turns out that the ADDIE model is also not difficult to apply in the context of developing teaching materials to assist in analyzing and critically understanding each topic raised in the teaching materials made.

The third meeting, conducted by Cahyadi [25] who stated that the development of educational technology in developing quality learning that leads to solving student learning problems can be designed using learning resources in the delivery of teaching materials. The development of teaching materials needs to refer to the development model to ensure the quality of teaching materials in supporting learning effectiveness. one of the frequently used teaching material development designs is ADDIE. The ADDIE instructional model is an excellent instructional process used in the development of teaching materials.

The fourth finding, carried out by Puspasari [26] that teaching material products with the ADDIE method are suitable for use judging from the results of the questionnaire analysis distributed to students who have used the teaching materials, it was obtained that: the level of

sieve isi book of 77.3%, the level of design feasibility of 75.55%, the level of kelayak an media of 80%, a student individual limited test eligibility rate of 84.31%, a lecturer limited uj i eligibility rate of 78.18% and a large group limited test feasibility rate of 83.52% meaning that the perception of validators, course lecturers, and students towards the use of graf theory compilation textbooks is positive.

The Fifth Finding, Development of teaching materials using the ADDIE Tegeh and Kirna models [27] stated that the results of field tests showed a percentage of 82.14% by 18 students and 87.27 % by lecturers who taught the course. The results of the course content expert test show that the teaching materials are quite well qualified. Learning design experts and learning media experts assess teaching materials to be of good qualifications. The results of individual trials show that teaching materials are at sufficient qualifications. The results of field tests show that the teaching materials are well qualified. Therefore , interesting teaching materials are carried out using the ADDIE model.

The Sixth Finding was made by Susanto [28] model ADDIE in developing This digital teaching material meets the eligibility criteria based on the percentage of expert validation results which can be described as follows: 71% of the material expert validation meaning included in the strong criteria, 83% of the linguist validation means that the language used is strong or easy for students to understand, and 90% of the design expert validation is included in the near-perfect criteria and worth using.

From some of the findings above, it is known that the application of the ADDIE Model in designing Digital Teaching Materials is very significant to be carried out in the world of Education because with Digital Teaching Materials developed using the ADDIE model It is very easy for learners to understand. In the development of teaching materials using the ADDIE model, more attention will be paid to starting from Analysis, Design, Development, Implementation , and Evaluation. Development is presented as an educator's effort to balance technological capabilities with learner and content needs. Effective multimedia projects develop through consistently planned efforts based on measurable learning outcomes Due to advances in cognitive science research, designers can develop learning projects that Take into account the complexity of cognition with a variety of technology-based teaching materials.

IV. CONCLUSION

In learning there are problems and problems in learning students with the use of teaching materials. Technology plays a role in developing learning materials to be more effective. The development of teaching materials needs to be seen based

on the development model so that teaching materials can support learning well. One of the models for developing teaching materials is using the ADDIE model with five stages of analyzing, designing, developing, implementing and evaluating. Based on the results of a literature review, the application of the ADDIE model can produce good and effective teaching materials to be used in the learning process and the ADDIE steps are more systematic to be applied.

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