

The Development of Learning Media Oriented to Team Games Tournament Learning Model Using Canva and Kahoot! to Improve Student's Problem Solving Ability in SMAN 10 Medan

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Abstrak. *This study aims to determine (1) the process of developing learning media based on Canva and Kahoot, (2) learning media can be used for the learning process, and (3) improving the problem solving ability of students who are given mathematics learning with the topic of developed arithmetic series. The subjects in this study were students of class XI IPA -1 SMA NEGERI 10 MEDAN. Learning tools developed in the form of learning media using Canva and Kahoot!. Data analysis techniques in the development of learning tools used descriptive statistical analysis techniques. The results showed that: (1) the learning media development process involved five stages of development and then before being tested in the field, validation was obtained with the media assessment average score from the media expert team was 3.2 (valid) and material expert was 3.45 (valid). , based on the efficiency aspect based on the results of the student response questionnaire, the first trial obtained a score of 72% (positive) and the second trial was carried out with revisions and got a score of 85% (very positive), and based on the effectiveness of the learning tools developed on the problem solving abilities of students concluded on: student learning completeness after the use of media by 85%; (2) with the previous description the media can be used as a learning aid with revisions, and (3) the improvement of problem solving abilities can be seen from the n-Gain value of 0.5 which means it is in the medium category. [THE DEVELOPMENT OF LEARNING MEDIA ORIENTED TO TEAM GAMES TOURNAMENT LEARNING MODEL USING CANVA AND KAHOOT! TO IMPROVE STUDENT'S PROBLEM SOLVING ABILITY IN SMAN 10 MEDAN] (Jurnal Fibonacci, 03(2): 28 - 35, 2022)*

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Introduction

Education can be defined as a process with specific methods to gain knowledge, understanding, and how to behave according to their needs. In a country's life, education plays an essential role in ensuring the survival of the state and nation because education can improve and develop the quality of Human Resources (HR). Educaion is a means of preparing the quality of education by improving the teaching and learning process.

Education, especially schools, must have a learning system that emphasizes a dynamic process based on efforts to increase students' curiosity about the world of education. Education must design student-centered learning so that students' social interests and activities continue to increase.

By learning, students' abilities will increase. (Prasetyaningrum et al., 2013).

Government Regulation Number 20 of 2003 concerning the National Education System, it is stated that education is a conscious and planned effort to create an atmosphere of learning and its potential to have religious spiritual power. Self-control, personality, intelligence, noble character, and skills needed by him, the community, the nation and the State.

In this era of globalization, advances in science and technology are increasingly advanced and modern. The advancement of science and technology can have both positive and negative impacts. This can be positive if we can make the best use of the advancement of science and technology, and we use it to

develop and advance education, especially in learning. Conversely, if we can only stay silent in the midst of the development of science and technology, this science and technology will also destroy us.

In addition, teachers tend to be imitators rather than inventors. For example, many teachers in the era of globalization with the advancement of more modern science and technology, still use strategies, methods, and learning media that have existed from ancient times, to used now. So that this causes laziness for teachers, to create new things in learning. And the learning carried out will feel bland, monotonous and not dynamic. Therefore, educators must be able to create innovation in the learning process so that students feel motivated, excited and excited to participate in learning, and the material presented by the teacher will be more optimally absorbed and accepted by students.

In the current pandemic era, a teacher must be able to use learning media as creatively as possible. Because basically every lesson so that goals can be achieved, it takes teachers, instructional media and students. The role of the teacher here is very important because the teacher is the person who will transfer knowledge to their students. And a teacher is required to be able to use learning media that is in accordance with the conditions and conditions that are now completely online so that learning can be carried out effectively and efficiently.

From the results of my interviews with class XI students at SMA Negeri 10 Medan, it is known that there are limitations to learning media, especially during a pandemic like today. Lack of interactive and fun learning media results in distance learning being less effective. Mathematics learning in the school is short of innovation. Just using Google Classroom as the way to deliver the material without online meeting or something like that.

One of the changes that teachers can make is to develop a model or method that is right for the learning process. Creative teachers will always create ideas in designing new learning systems that allow students to

achieve their learning goals with satisfaction. To obtain this new learning system, a learning system development research method is needed. The learning system's research and development stage can be analyzed from a series of teacher duties in carrying out main tasks ranging from designing to implementing to evaluating learning.

Based on the characteristics of the subject matter and the student's condition, the Teams Games Tournament learning model is an alternative to improve student learning outcomes. To overcome individualism, according to Purnamawati et al. (2014) that the TGT model is one type of cooperative learning model that places students in study groups consisting of 5 to 6 students who have different abilities, gender, and syllables or races. The teacher introduces the subject matter, and students work in their respective groups. To ensure that all group members have mastered the lesson, all students will be given academic games

Review of Related Theories

In KBBI, innovation is the introduction or introduction of new things; renewal, new discoveries that are different from existing or previously known (ideas, methods or tools).

According to Miles in Soemanto, innovation is the kinds of "changes" in the genus. Innovation as intentional, new, specific changes to achieve system goals. So this change is desired and planned.

The definition of innovation above, according to experts, is not a fundamental difference between the meaning of innovation from one another. Therefore, a common thread can be drawn that innovation is an idea, practical things, methods, methods, human-made things, which are observed or felt as something new to a person or group of people (society). This new thing can be in the form of an invention or a discount that is used to achieve certain goals and is observed as something new for a person or community group. So innovation is part of social change.

From this viewpoint, it can be taken red that educational innovation is innovation in the field of education or innovations to

solve educational problems. So educational innovation is an idea, item, method that is felt or appreciated as something new to a person or group of people (society) either in the form of inventions or discoveries, which are used to achieve educational goals or to solve educational problems.

The media development model used is namely ADDIE. It stands for Analysis, Design, Development or Production, Implementation or Delivery and Evaluations. The ADDIE model was developed by Dick and Carry (Endang Mulyatiningsih, 2012: 200) to design a learning system. In addition, this model can be used for various forms of product development such as models, learning strategies, learning methods, media and teaching materials. The following are examples of activities carried out in each ADDIE model development:

1. Analysis

The main activities carried out at this stage are analyzing the background or need for the development of instructional media and analyzing the feasibility and requirements for developing instructional media. After analyzing the need for development to be carried out, researchers also need to analyze the feasibility and requirements for developing instructional media. This analysis was conducted to determine the feasibility of using the learning media.

2. Design

This stage is the design stage of the instructional media. This activity is a systematic stage starting from setting the objectives of learning media, designing teaching and learning materials or activities, and evaluating learning. This design is conceptual to underlie the next development process.

3. Development

The development stage in the ADDIE model contains activities for the realization of the product design. In the previous stage, the draft that has been compiled is realized into a product that is ready to be implemented.

4. Implementation

The designs and products that have been completed are implemented in real situations and classes. From the implementation that has been done, an initial evaluation will be obtained to provide feedback on the application of the learning media.

5. Evaluation

The evaluation stage is carried out in two stages, namely formative and summative. Formative evaluation is carried out after face to face while summative is carried out after all learning activities have ended. Summative evaluation is carried out to measure the final competence of subjects in the development of instructional media. The results of the evaluation are used to provide feedback to the users of learning media.

The reason for choosing this development model is because this development model already includes all the components that are in other media development model.

Method

Location and Time Research

This research was conducted online at SMA Negeri 10 Medan. Conducted in class XI IPA 1 for the 2020/2021 school year. This research is planned to be carried out in June 2021.

Type of Research

The design of this study is a development research carried out with the aim of developing mathematics learning media on series material. Research and development as a process for developing and validating products that will be used in education and learning.

Subject and Object of Research

The subjects in this study were students of class XI IPA at SMA Negeri 10 Medan. The object examined in this study is the used of mathematics learning media assisted by Canva and Kahoot! to improve student's problem solving ability in class XI IPA students.

Research design

The development model that researchers will use is the ADDIE (Analysis-Design-Development-Implementation-Evaluation) model. This model was developed by Molenda and Reiser (2003). This model is often used to describe a systematic approach to instructional development.

Molenda stated "I am satisfied at this point to conclude that the ADDIE model is merely a colloquial term used to describe a systematic approach to instructional development, virtually synonymous with instructional systems development (ISD)." In addition, Molenda also said that the ADDIE model is a general learning model and is suitable for development research. When used in development, this process is considered sequential but also interactive (Molenda, 2003).

In line with Molenda's opinion, Cheung (2016: 4) states that ADDIE is a model that is easy to use and can be applied in curricula that teach knowledge, skills or attitudes.

Cheung stated "The advantage of the ADDIE model is that it is simple to use and can be applied to the curriculum that teaches knowledge, skills, or attitudes." In addition, according to Mulyatiningsih (2011: 5) "the ADDIE model is a model that is considered more rational. and more complete than other models ". Therefore, this model can be used for various 30 kinds of product development forms such as models, learning strategies, learning methods, media and teaching materials

Research procedure

The research method according to Suharsimi Arikunto is a method used by researchers in collecting research data. This researcher refers to the model developed by Dick and Carry, namely, ADDIE this model includes. 1) Analysis, 2) Design, 3) Development, 4) Implementation, and 5) Evaluation

Data analysis technique

The data analysis technique is a technique used to analyze the data obtained in the research process. The objective point of data analysis is to determine the validity of the practicality and effectiveness of the learning media using Canva and Kahoot!

To find out the validity of learning media using software and student and teacher response questionnaires used descriptive statistics based on the average score of each learning media that have been validated by validators in the field of mathematics education and revised based on the validators' corrections. The value given by the validator each has four different scores for the measurement scale of development research using the Likert scale. For the purposes of quantitative analysis, the answer can be given a score table as follows:

Table 3. 1 Likert Scale

No	Quantitative Analisis	Score
1	Strongly Agree	4
2	Agree	3
3	Disagree	2
4	Strongly Disagree	1

The value given is 1-4 for respondents strongly agree, disagree and strongly disagree, the point level scale in this study uses intervals. Neutral responses are intentionally omitted, so that respondents can show their attitudes or opinions towards the statements submitted by the questionnaire. This is done to avoid errors in the Likert scale method, where errors in the tendency for intermediate points of the scoring sheet will produce data, which will be used to determine the validity of the product developed.

To make it easier to analyze the validation result data, the validation data

summary is presented in a table with the following format:

The average value of each criterion can be measured as follows:

$$K_i = \frac{\sum_{j=1}^n V_{ij}}{n}$$

- Information :
 K_i = Criteria's Score
 V_{ij} = Score from validators
 n = Total validators

The average value of each aspect can be measured as follows:

$$A_i = \frac{\sum_{j=1}^n K_i}{n}$$

- Information :
 A_i = Result of each Aspect Score
 K_i = Score from Criteria
 n = Total validators

And to find the total average of all validity values with the following formula:

$$Average\ total = \frac{\sum_{j=1}^n A_i}{n}$$

(Wilda, 2017)

Determine the validity of this mathematics learning media from the average results of the total validity by matching the validity category of learning media with the following validity categories:

Table 3. 2 Validation Criteria

Interval Score	Validity Category
$0 \leq RTV < 2$	Invalid
$2 \leq RTV \leq 4$	Valid

Note: RTV is the total average of the results of the validator's assessment of the developed mathematics learning media.

Mathematics based learning media is said to be valid if the total average results of the validator's assessment of the learning device are in the "valid" or "very valid" category. If there is a score that is less valid or invalid, it will be used as input to revise this mathematics learning media.

Result and Discussion

Result

The stages that the researcher uses in this development use the ADDIE development model which consists of 5 stages, namely: analysis, design, development, implementation, evaluation. The results of the analysis that have been described in the pre-research results are known that in the learning process there is no special learning media that is applied in the learning process. In fact, the ability to understand concepts in mathematics is still low, as can be seen from the learning outcomes obtained from teachers who teach these subjects, so the researchers chose to develop this Canva and Kahoot-based learning media.

Next is the design stage. At the design stage, the framework and ideas are compiled in making interactive games. Designing is done so that researchers have an idea of the appearance, content and flow of the educational game that will be made. The design of the instrument was carried out to compile a description of the media validation questionnaire that had been made. These instruments include questionnaires from media experts and material experts as well as student response questionnaires to the use of media.

Next is the development stage. The development stage is the stage in making learning media. After the product is finished, it is then evaluated by experts called validation. The purpose of validation is to find out the shortcomings and weaknesses of the media and obtain inputs to improve the developed media. In addition, validation is also intended to obtain an assessment of

whether the media is feasible or not. The results of the material expert's assessment of learning educational games get the "Valid" category with an average score of 3.45 as well as the media expert's assessment gets the "Valid" category with an average score of 3.2.

Two trials were held, namely the first trial in a small class, 6 students were taken randomly and then divided into 3 groups. After the research results are obtained, an evaluation is carried out to achieve the desired response target. The second trial was carried out after the first stage of product revision. It was conducted to 20 students and divided into 5 groups randomly. After the results have met the target, the data will be used for efficiency analysis.

For the efficiency of this media, based on the results of data processing from the student response questionnaire in a small-scale trial which was attended by 6 students, the learning media obtained an average percentage of 72% and obtained the assessment criteria "positive" while the field trial which was attended by 20 students on learning media obtained an average percentage of 85% and obtained the "very positive" assessment criteria it means that the media had been developed is Efficient to use.

In the small class trial, revisions were made before the large class trial. The influencing factor in the first trial was that students were still confused about using learning media and tended not to focus when the teacher was explaining. The influencing factor from the media side is the lack of clear instructions on the use of media.

For the effectiveness analysis, the results obtained 30% from the individual posttest and 85% from the individual pretest, which means that there is an increase in the learning outcomes of the students who take part in learning using Canva and Kahoot interactive media. it can be concluded that the Canva and Kahoot learning media are effective.

Then for problem solving ability, the result $(g) = 0.7$ which is included in the Medium-(g) category is an increase but not significant, which means that there is a significant increase in students' mathematical problem solving ability.

The evaluation stage is a stage that exists in each of the previous stages of the process from analysis to implementation according to the ADDIE research procedure chart. Based on the results of the development carried out by going through the 5 stages above, the final product is produced, namely Canva and Kahoot!-based learning media. Who have qualified properly based on the results of the validation of media experts and material experts and have very attractive qualifications based on the results of small and large class trials.

Closing

The process of developing Canva and Kahoot-based learning media was developed using the ADDIE method. The analysis stage includes finding out the learning needs and learning media used in the research area. The design stage is the preparation of the learning media scheme, collecting learning resources and preparing all graphic needs. The development stage is compiling what has been prepared in advance and then validated before being applied in research schools. The developed media was validated by 3 education practitioners who are material experts and media experts given suggestions for revision of improvements. Implementation stage is the stage of applying the improved media to research schools to obtain student responses and problem solving abilities. The evaluation stage is the final stage to find out the advantages and disadvantages of learning media. The weakness of this media is the lack of learning media that student's have. So that they cannot use the media perfectly.

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