

Development of Concept Mapping as Optimizing Apperception of Learning for Social Arithmetic Materials

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ABSTRACT

The development of concept mapping as an optimization of the learning apersepsi of social arithmetic materials in grade VIIA MTs Ghozaliyah Jombang aims to develop a valid and practical concept mapping teaching materials by optimizing student perception. This research is a type of research and development (R&D) with addie model, analysis, design, development, implementation and evaluation. Based on the results of the development that has been done, the final product of research and development is the learning media concept mapping using video on social arithmetic material. Based on the assessment by media experts get a score of 90% with a classification very valid or very worth using. Assessments by material experts score 89% with a very valid classification or very worth using. The results of the student response questionnaire scored 77% with a practical classification. Based on these results, it can be concluded that concept mapping learning media packaged in the form of video is worth using.

Keywords: *Concept Maps; Learning Apprehensils; Learning Video.*

INTRODUCTION

Mathematics is a science that must be owned by every human being, because basically mathematics is used in every science. So far, there has been a general impression that mathematics is a difficult and scary field of study (Fitria et al., 2019). The right thing is the lack of solving strategies and the inability of students to translate problems in mathematical form. Yeni & Almuslim (2015) suggests that Mathematics is a symbolic language whose practical function is to express quantitative and spatial relationships while its function is to facilitate thinking.

Based on the results of interviews with classroom teachers conducted by researchers. Class VII A students of MTs Ghozaliyah Jombang are less enthusiastic in learning Mathematics. Several factors caused the students of class VII A of MTs Ghozaliyah Jombang to be less enthusiastic, one of which was because students thought that the field of mathematics was a difficult subject and almost all students of class VII A of MTs Ghozaliyah Jombang did not like mathematics. Because from the beginning students did not like mathematics, resulting in students being less active in the mathematics learning process. However, students must learn mathematics because it is a means to solve problems in everyday life. Thus the researchers tried to develop teaching materials in the form of concept maps (concept mapping), with the hope that learning through these teaching materials students better understand and be more active in the mathematics learning process (Wahyuni et al., 2021).

Based on the results of previous research conducted by (Margono, 2017) with the title "Implementation of Concept Mapping Methods in Mathematics Learning as an Effort to Improve Mathematics Learning Activity (CAR in Class VIII Students of SMP Negeri 2 Gondangrejo)". The results of this study indicate an increase in student activity in learning mathematics. This can be seen from: 1) the activeness of students in asking questions, before the action was 16.7%, after the action rose to 60%, 2) the activeness of students in working on practice questions in front of the class, before the action was 16.7%, after the action rose to 66.7%, 3) the activeness of students working on practice questions, before the action was 30%, after the action rose to 73.3%, 4) the activity of answering questions, before the action was 20%, after the action rose to 70 %. The results of written tests conducted before and after the study showed an increase in student learning mastery. Before the class action, the student's achievement

was only 46.7%, after the action, the student's achievement rose to 70%. This study concludes that the use of the concept mapping method in learning mathematics can increase student activity so that it has an impact on increasing student learning mastery.

Concept maps are active learning tools that include mind mapping (Ramadhan et al., 2016). Concept maps are a representation of several concepts and various relationships between a person's knowledge structure. Concept maps are a tool to represent the existence of a meaningful relationship between concepts so as to form a proposition (Ginting, 2017). Based on the opinion of the figures, the researcher concluded that concept maps are teaching materials that use interrelated concepts. Concept maps are connected by lines or pictures. Concept maps are structured and clear (Satiti et al., 2021).

According to the Big Indonesian Dictionary, what is meant by apperception is the conscious observation (appreciation) of everything in one's own soul which is the basis for comparison and the basis for accepting new ideas. Apperception can also be interpreted as a process of combining old and new experiences. Some literature explains, apperception includes activities, (a) exposure of a short description by providing brief information about the content of the lesson to be taught, (b) exploration, re-discovering the material to be taught, by asking the material that has been taught previously, (c) reviewing the relevance of the material being asked to the material to be taught, and (d) linking the material that has been taught previously with the material that will soon be taught. Based on the opinions of the above figures regarding apperception. The researcher concludes that apperception is a thought from childhood that continues to be developed with experience, age, education and more. So, every new lesson or new thing must be related to what has been learned or passed before.

METHOD

This research is classified in the type of research R&D (Research and Development), which is based on the ADDIE model. The ADDIE model consists of 5 stages, namely analysis, design, development, implementation, and evaluation (Sugiyono, 2011). Based on the ADDIE model, it consists of learning media in the form of concept mapping and learning apperception which are packaged in the form of learning videos. To determine the quality of the developed mathematics learning model, an assessment of the validity and practicality of the learning media was carried out. The validity assessment was carried out by media expert validators, material experts and the practicality assessment was carried out by the test object after watching the learning media.

The research was conducted at MTs Ghozaliyah Jombang. Observations at the beginning of this study were carried out with teachers and students of MTs Ghozaliyah Jombang. The object of the trial on the concept mapping learning media which is packaged in the form of this learning video is class VIIA MTs Ghozaliyah Jombang. Then the expert validator involved was a lecturer in Mathematics Education at KH University. Abdul Wahab Hasbullah Jombang and Mathematics teacher at MTs Ghozaliyah Jombang as material expert validators. Meanwhile, the validator involved in assessing media validation was the ICT teacher at MTs Ghozaliyah Jombang as a media expert validator. This validation questionnaire is used to determine the feasibility or validity of learning materials and media before being distributed to the test object.

RESEARCH & DEVELOPMENT RESULTS

Analysis

At this stage, the main activity is to analyze the need to develop new learning media and analyze the feasibility and requirements for developing new learning media (Sugiyono, 2011). Based on the analysis phase, the researcher conducted observations during the research activities. The learning media used was video which included a concept mapping on social arithmetic material for seventh grade students of SMP/MTs.

Design

At this stage the media design developed is described in the following stages:

- Determine the apperception material and the core material.
- Develop a concept mapping that will be included in the PPT.
- Define templates and mapping on PPT to make it look attractive.
- The PPT is then converted into a video and uploaded to YouTube.

Development

Product design that has been prepared, developed based on the following stages:

- Researchers created concept mapping using PPT. Furthermore, the researcher edited ppt as interesting as possible, after which the researcher re-corrected the media of the development results by asking for the guidance of the supervisor before it was validated. If it is appropriate then the product is ready to be validated.
- Validation of ppt concept mapping learning media design is done by media experts and material experts. The purpose of validation is to obtain assessments and suggestions from material experts and media experts on the suitability of the material and the appearance of the media.
- After getting input from experts and validated, then known weaknesses. These weaknesses are then tried to be reduced by improving the products developed. The product has been revised and got a good predicate, then the product is continued to the next stage of implementation.

Implementation, Evaluation, Test Results, Validation, and Revision

The implementation phase was carried out on class VII students at MTs Ghozaliyah Jombang as many as 25 students. During the trial, the researcher made notes about the shortcomings or obstacles that occurred when the learning media was implemented, besides that students were also given a response questionnaire regarding the practicality of the learning media. The researcher also gave a questionnaire response to practitioners/teachers to find out the teacher's response to the learning media.

After the implementation is done, the researchers then evaluate the products that have been developed. In this evaluation, there were obstacles when the implementation process was carried out, one of the obstacles was that the seventh grade students of MTs Ghozaliyah Jombang were not accustomed to using video learning media and some of the class students were boarding school students. Based on these constraints, the researcher offers a solution, namely playing back the learning videos in the classroom and conducting re-learning and quizzes to determine the success of product trials. The success of the product trial was also obtained from the results of the student response questionnaire which stated that the learning video product with concept mapping was practical.

Sugiyono (2011) said that the questionnaire is a data collection technique that is done by giving a set of questions or a written statement to the respondent to answer. In this study, the questionnaire or questionnaire used was an expert validation questionnaire and a student response questionnaire. Data from the validation results and student response questionnaires are presented in table 2 below. The formula used in the questionnaire test (questionnaire) is:

$$\text{Index(\%)} = \text{Total Skor} : \text{Total Maximum} \times 100\%$$

Information:

Maximum score = number of respondents the highest score likert

Table 1. Learning Media Assessment Interval

Interval Skor	Category
0% - 19,99%	Very Invalid/Practical
20% - 39,99%	Invalid/Practical
40% - 59,99%	Quite Valid/Practical
60% - 79,99%	Valid/Practical
80% - 100%	Very Valid/Practical

Table 2. Learning Media Assessment Results

Validator/Practitioner	Score	Score Total	Result Percentage	Category
Media Expert Lecturer	45	50	90%	Very Valid
Material Expert Lecturer	80,5	90	89%	Very Valid
Student Response	996	1.300	77%	Practical

It can be seen from table 1 that the percentage of validation score by media experts, material experts and student responses regarding mathematics learning media is 77%, 89% and 90% respectively. So it can be concluded that the results of the development of mathematical learning models in the form of concept mapping packaged in this learning video are valid based on each validator assessment, obtained an average score percentage of 85%. Based on the average results can be concluded that the learning media is valid and feasible and practical to use as a learning medium.

In this study, revisions were not made because the products developed were declared valid and practical. The product developed is valid and meets the feasibility target. Therefore, product trials got a good response from students with practical response questionnaire results.

DISCUSSION

This research was conducted with ADDIE model, analysis, design, development, implementation, and evaluation. The analysis was conducted by observation, in order to know the needs of teachers and characteristics of students. The design is done after knowing the needs and characteristics of the students. Development is done after the design is made then continued with validation of material experts and media experts, after it is declared valid, the implementation stage is carried out. The implementation stage is done to find out how the learning video media has been created, followed by a questionnaire to find out the interest of students after seeing the video. Evaluation is done if the learning media is declared unfit, there is a suggestion or lack of validity and practicality.

In this study, researchers used validation questionnaires to obtain assessments from materials and media. In students, researchers disseminated questionnaires conducted after students viewed learning videos to find out the practicality of learning media. Learning media is declared valid and practical. The resulting product is a mathematical learning video in the form of concept mapping. The learning video can be accessed through youtube <https://youtu.be/u8ARdR9rxfc>. In this development has several advantages one of which media can be used anytime and anywhere. The social arithmetic material displayed corresponds to real life.

CONCLUSION

Based on the results of the development that has been done, the final product of research and development is the learning media concept mapping using video on social arithmetic material. Research conducted is a type of research development or Research and Development (R&D) using the ADDIE model. The analysis stage is done by conducting interviews with math teachers in the school studied. At the design stage is done by compiling materials, concept mapping, and learning videos. The development stage is done by validation to material experts and media experts. Furthermore, the implementation stage by conducting product trials to grade VII A MTs Ghozaliyah students as many as 25 students by providing a questionnaire response to the media developed. The final stage of evaluation, this stage is done to see if the media is in accordance with the objectives or not by looking at the results of the data of the questionnaire validity and practicality.

The advantages of learning media are: (1) Media can be used anywhere and anytime. (2) The material delivered is easy to understand. (3) Colors, images, interesting animations. (4) The apercptions presented motivate students in learning. This learning medium also has some drawbacks, namely, (1) the size of the video is too large. (2) Not all students are familiar with video learning. (4) Student limitations that make students unable to view the video.

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