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DEVELOPMENT OF GEOGEBRA-BASED LEARNING MEDIA ON SPATIAL BUILDING MATERIALS IN CLASS VIII STATE FIRST HIGH SCHOOL 8 PAGUYAMAN

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Abstract:
This study aims to develop learning media based on Geogebra on the material of Building Space for Junior high school class VIII. The type of research is product development research in the form of geogebra-based media in learning mathematics on building materials in class VIII. This development research uses a descriptive approach and refers to the ASSURE development model, which includes 6 stages, namely analyzing the learner (analyzer learner), stating the goal (State objectivity), choosing technology, media and materials (Select technology, media and materials), using technology, media and materials (Utilize technology, media and materials), requesting student participation (Require learner participation), and evaluation and revision (Evaluate and Revise). In its development process, this research involves experts as validators of the developed media. The results of this study indicate that the expert validator stated that the geogebra-based learning media was valid and more than 70% of students responded positively. This shows that the geogebra-based learning media is good and worthy to be used as a medium for learning mathematics in class VIII.

Keywords: Learning Media Development, Geogebra

INTRODUCTION

The teaching and learning process or the learning process is an activity to implement the curriculum of an educational institution, in order to achieve educational goals. The teaching and learning process is also very influential on the success of students in understanding the material presented by the teacher. So that teachers are required to use media that attract students' attention, especially mathematics.

Thus, the main function of learning media is as a teaching aid, namely supporting the use of teaching methods used by teachers. According to Musfiqon (2012:12), in choosing and using learning media, one aspect that must be considered is the child's learning modality, learning modality is the basic potential or tendency of the child. With varied learning modalities, the selection of learning media should not only focus on one modality in general.

Based on the theory above, researchers are trying to develop learning media by utilizing existing technology, one of which is by utilizing geogebra applications. Geogebra is a computer application that is used to help in the field of mathematics. According to Ljubica Diković in an article entitled "Applications Geogebrainto Teaching Some Topics of Mathematics at the College Level 2009", Geogebra is a dynamic geometry software that supports the construction of points, lines and all conic sections. facilitate mathematical symbols such as finding the important point of the root function, extreme points and point changes in functions, directly entering equations and coordinates, finding derivatives and integrals of the input functions. From the description above, Geogebra can be used as a medium for learning mathematics in schools. Geogebra provides many facilities that can assist teachers in presenting mathematical objects such as graphs and algebraic forms in one window.

The purpose of utilizing geogebra applications in learning media is to create interesting, fun and interactive learning conditions and atmosphere. Geogebra-based learning media can be used for learning in the classroom and outside the classroom, both for students and teachers themselves, besides that learning can be done at any time without being limited by space and time.

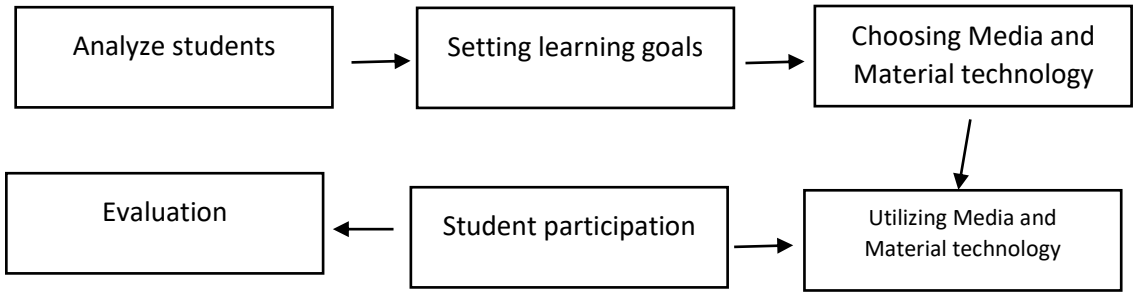
METHOD

The research was conducted in the even semester of TP. 2021/2022 at Junior high school class 8 Paguyaman, Boalemo Regency. The method used in this research is the research and development method or Research and

Development. Development or Research and Development is a research method used to produce certain products and test the effectiveness of these products.

This study was designed using the ASSURE model. ASSURE is an abbreviation of the development stage which consists of Analyze Learners; State Objectives; Select Methods, Media, and Materials; Utilize Media and Materials; Require Learner Participation; and Evaluate and Revise.

There are six stages in the ASSURE model, which can be seen in the flow chart as follows:



The media development instrument used was the validation of experts, namely material and media experts, and student response questionnaires. The data taken in the development of this teaching media is quantitative data in the form of assessment points given by experts to the teaching media in accordance with the assessment given. The data obtained in this study are qualitative and quantitative data.

FINDINGS

Based on the data results from the implementation of the trial activities carried out in developing geogebra-based learning media on spatial construction materials, they are as follows:

The development of Geogebra-based learning media on building materials in class VIII of Junior high school class 8 One Roof Paguyaman was carried out using a descriptive development procedure. The purpose of this research is to develop Geogebra-based media as a product of mathematics learning media, as described in the previous chapter. In order to fulfill this objective, a development research using the ASSURE model research design was carried out first. The ASSURE model consists of 6 stages, namely: analyzing learners (analyzer learners), stating goals (state objects), choosing technology, media and materials (select technology, media and materials), using technology, media and materials (utilize technology, media). and materials), asking for student participation (require learner participation), as well as evaluation and revision (evaluate and revise)

Description of the development stage of Geogebra-based learning media

1) Stage of Analyzing Learners (Analyzer Learner)

At this stage the thing to do is analyze the characteristics of students. The main objective in analyzing, including that educators can meet the urgent learning needs of students so that they are able to get the maximum level of knowledge in learning.

At this stage, direct observations and interviews were conducted with the eighth grade mathematics teacher at Junior high school class 8 Satu Atap Paguyaman. From the results of observations and interviews, information was obtained that students generally tend to be passive in the learning process, this is due to the low use of technology in the learning process, especially the internet in mathematics lessons, especially the condition of schools that have been equipped with wifi facilities, should be used, both teachers and students in the learning process.

The general characteristics of class VIII students of Junior high school class 8 One Roof Paguyaman have the work background of their parents, the majority of which are factory workers and traders. With the majority of parents' education in junior high and high school. This school is located on Jalan Lintas Sugar Factory and is in the Barak Market area. Meanwhile, students have never participated in learning using Geogebra-based learning media.

2) State Object Stage

The next stage in the ASSURE model is to formulate goals and standards. In formulating learning objectives and standards, it is necessary to pay attention to the basis of the strategy and the selection of the right media. The development of Geogebra-based learning media aims to design a mathematics learning media by utilizing geogebra and internet applications that can be used as student learning media.

In this study, the purpose of developing Geogebra-based media is to create interesting, fun and interactive learning conditions and atmosphere. In addition, geogebra-based learning media can be used for learning in the classroom and outside the classroom and without being limited by space and time.

3) Stage of selecting Technology, Media and Materials (Select Technology, Media and Materials)

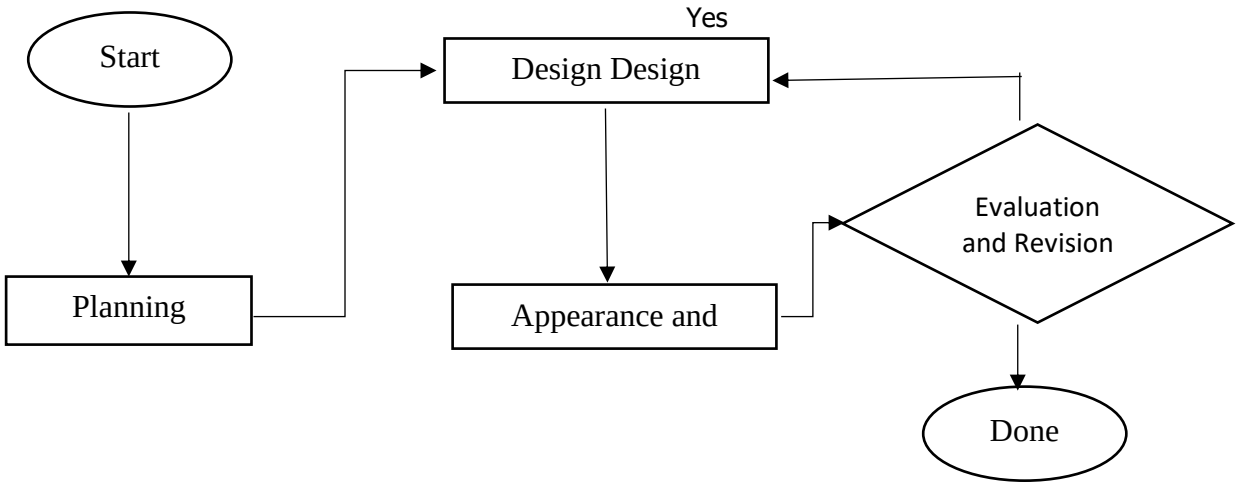
The next stage in making effective learning is choosing technology, media and materials. In this study, the technology chosen was the Geogebra application which was presented by utilizing existing facilities at Junior high school

class 8 Satu Atap Paguyaman, namely a computer laboratory supported by an adequate wifi network. The material chosen is building space.

4) Stage of Using Technology, Media and Materials (Utilize technology, media and materials)

Preliminary Design

The initial design carried out in this study was all activities carried out to obtain the final results of learning media development. The initial design is described in the flow chart below:



5) Stage of Involving Student Participation (Require Learner Participation)

The main purpose of learning is student participation in the material and media that we display. At this stage the product is tested on students, after which students are asked to fill out student response questionnaires.

Product assessment aims to obtain accurate data that is used to make revisions (improvements), set goals for the effectiveness, and efficiency of the resulting product. Field trials are carried out in the even semester of the 2021/2022 academic year. The subjects of this field trial were eighth grade students of Junior high school class 8 Paguyaman, Boalemo Regency.

6) Evaluation and Revision Phase (Evaluate and Revise)

In each assessment and revision process, it is a very important aspect in developing the quality of learning. Evaluation of the product or media developed is carried out at every stage from planning, design to media testing by researchers and supervisors by providing input and suggestions for improvement. As for the development stage (Develompent), the evaluation is carried out by media experts and material experts. In addition, students and teachers also provide evaluations as users of products or media through student response questionnaires and media evaluation sheets by teachers. The evaluation aims to improve the products developed.

a) Trial of geogebra-based learning media products

The product test was carried out to obtain direct input from students about geogebra media in mathematics learning so that the results were used as the basis for improvement. The test subjects of media products were students of class VIII Junior high school class 8 One Roof Paguyaman, Boalemo Regency, totaling 20 people.

After learning with geogebra-based learning media is complete, students are distributed questionnaires that have been constructively validated. Furthermore, the data obtained from this trial is then analyzed in the form of a percentage. Student responses are categorized as positive if the percentage of positive responses for each aspect that is responded to is a minimum percentage of 70%. The results of the analysis are used as a consideration to produce good and quality geogebra media in mathematics learning, which can be used as a continuous learning medium.

DISCUSSION

The development of Geogebra-based mathematics learning media is carried out using the ASSURE development model (analyzer leaener, state objects, select technology, media and materials, utilize technology, media and materials, require learner participation, and evaluate and revise).

The purpose of this study includes learning objectives that are in accordance with the material being taught, in this study the material for building flat sides was chosen. The purpose of selecting technology and media that has been described previously as well as the purpose of developing Geogebra-based learning media aims to utilize geogebra and internet applications in learning mathematics. So that the process of learning mathematics can be done without being limited by space and time. This study chose geogebra application as the technology used.

In using technology, media and materials, it includes initial design, in this case creating an account on geogebra, making geogebra applets, structuring displays and animations (slider).

The last stage is evaluation and revision, including 1) media validation by the validator followed by media revision until the media is said to be valid. 2) product trials were conducted to see the effectiveness of Geogebra-based learning media in learning mathematics.

Based on the analysis of student responses to product trials in the field that have been stated previously, the table shows that students respond positively. This means that students' responses to geogebra-based learning media meet the effectiveness criteria.

CONCLUSION

The development of Geogebra-based learning media was developed using the ASSURE development model in the development of Geogebra-based learning media on building materials in class VIII SMP has been assessed as valid by experts, so that this media can be used in the learning process. This media received a positive response from the eighth grade students of SMP Negeri 8 One Roof Paguyaman.

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