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DEVELOPMENT OF GEOMATHFUN INTERACTIVE LEARNING MEDIA ON SOLID GEOMETRY

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Abstract: This study aims to determine the feasibility of the product of a developed geomathfun learning media. This research uses R&D (Research and development) research methods, with a 4D development model, in which there are four stages, namely definition, design, development and dissemination. The data was obtained using the results of questionnaires and observations. The research sample is the fifth-grade students of SDN Pesanggrahan 10 Pagi. And get the results of media validation of 81% with a very decent category while material validation gets a percentage of 80% with a decent category. In this way, the geomathfun learning media contributes well to learning mathematics in spatial building materials.
Keywords: Learning media, Geomathfun, Geometry

INTRODUCTION

Interactive learning media can be used as an effective medium with multimedia facilities in the form of images, sounds and animations so that students more easily understand learning materials (Maryani, 2015) . The role of Multimedia in today's era is a factor that will get success in learning. This multimedia can add to the attractiveness of students in understanding a lesson easily if it is made as attractive as possible and easy to understand. Lack of learning media could make the learning process inside class Becomes more difficult to understand the medium material _ studied. Mathematics is one of the difficult subjects for students because mathematics is always related to numbers, formulas, three-dimensional shapes, and arithmetic.

Mathematics is one of the most important subjects because it learns basic science that is widely used in various fields of life. One of the subjects that occupy an important role in the world of education, but in reality, there are still students who find it difficult to learn mathematics. One of the materials contained in mathematics is building space. Building space is one of the learning materials in elementary schools, one of which is grade 5 elementary school material. Building a space contained in the 5^{th}-grade learning of elementary school discusses the properties of cubes and blocks. Based on the results of interviews conducted with fifth-grade students at SDN Pesanggrahan 10 Pagi in classroom learning, students feel that this space building material is difficult to understand the basics of building

cubes and blocks to how to calculate the surface area and volume of geometric shapes, participants students feel they need the help of learning media that can make it easier to understand this material.

The benefits of appropriate media for the learning process can help students visualize abstract mathematical concepts so that students can be motivated and add interest in learning. That way students will receive the material provided with more effective and efficient learning media. *GEOMATHFUN was* chosen as the name of a new application that means learning to build mathematical spaces is fun. This *GEOMATHFUN* application can be used by students and teachers of grade 5 elementary schools as interactive learning media to facilitate the learning process in building materials. The creation of the *GEOMATHFUN* application is expected so that grade 5 elementary school students can be more interested in learning to build spaces in a fun way so they can understand the properties of cubes and blocks and be able to calculate the volume of shapes and understand cube and block nets. Based on the problems encountered in the learning media, especially in the building materials contained in grade 5 Elementary School. So the author conducted a study with the title of developing interactive learning media geomathfun material for 5th-grade classroom construction.

METHOD

This study involved 5th-grade students of Pesanggrahan 10 Pagi SDN as a sample, with 26 students. Research and Development is a research method used to produce a certain product, and test its effectiveness of a product. The procedure for developing learning media in this study uses a 4D model according to Sugiyono, (2013) which stands for Define, Design, Development, and Dissemination, with the following stages.

Define stage, at this stage activities, are carried out to determine what products will be developed, as well as the specifications of the products to be developed. This activity is a needs analysis conducted through research and literature study. The design stage (design), at this stage, is an activity to make a design for the product to be developed and has been determined in the previous stage. The development stage, at this stage is the activity of making a design into a product and testing the validity of the product repeatedly until the product is produced by the specified specifications. The dissemination stage at this stage is an activity to disseminate products that have been developed and have been tested for use by others.

The collecting technique in this study used a questionnaire & observation. Observations were made to find out the problems experienced by teachers and students during learning. The use of research questionnaires consists of questionnaires: media validation, material validation, student responses, and teacher responses. Validation & response can be calculated using the following formula. (Yuanta, 2020)

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$$P = \frac{f}{n} \times 100\%$$

Information:

P = Percentage of validation

n = Maximum score

f = Total score of collected data

The results of calculations using this formula can be determined the level of success of the development of learning media according to the results of the validation of material experts and the media gets the following percentage and media justification criteria.

Table 1 Percentage and Eligibility Criteria for Media

Category Rating
7 6% - 100% Very decent
51% - 75% Eligible
26% - 50% Not Eligible
0% - 25% Very Inappropriate

(Damayanti & Dewi, 2021)

In addition to determining the level of success of the development of learning media based on the results of expert validation, determining the level of success is also obtained through the development of learning media based on the responses of students & teachers with the following eligibility criteria and media percentages.

Table 2 Percentage and Media Eligibility Criteria

Category Rating
81% - 100% Very Good
61% - 80% Good
41% - 60% Fairly Good
21% - 40% Not Good
0% - 20% Very Not Good

(Widiastika et al., 2020)

RESULTS AND DISCUSSION

The results obtained from the research and development of geomathfun interactive learning media on the material for building a 5th-grade classroom, are based on the steps in the following 4D development model.

Define stage (definition)

The researcher conducted the analysis carried out in this study including material analysis & needs analysis. The content contained in the needs analysis is an analysis of the teacher's needs in

knowing what kind of media can make it easier when delivering material in learning activities and analyzing the needs of students to find out media such as what can be understood and used easily. Material analysis adjusts the material in the learning media that will be made according to the curriculum at SDN Pesanggrahan 10 Pagi

***Design* stage (design)**

Geomathfun was created using the *SmartAppsCreatr application* with material that is easy to understand and has an attractive design. *You* can see an overview of the *SmartApssCreator design* that can be installed on Android-based smartphones.

Figure 1. Cover of Learning Media

Figure 1 is the cover contained in the learning media, the main page that can be seen when the learning media application is opened.

Figure 2 Introduction of Learning Media

That page in Figure 2 contains several menus such as basic competencies, characters, learning materials, practice, and information

Figure 3 Learning Media Cube Material

That page in Figure 3 contains one of the space building materials in learning media.

Figure 4 Learning Media Question Exercises

That page in Figure 4 contains the types of practice questions where the exercises can be selected according to the wishes of the students to do them.

Figure 5 Learning Media Cover

That page in Figure 5 contains a bibliography, about the application, development, and user-readable instructions for use.

Stage of *development* (development)

The results of media expert validation contain several aspects that are first there are aspects of the physical appearance of the media on the aspect this gets an acquisition score of as many as 29 presentations averages by 83% with a very decent category. The aspect second is the use of text on the aspect this gets an acquisition score of 12 presentations average of 80% with category worth. On the aspect third namely the use of color in aspects this gets an acquisition score of as many as 7 presentations averages by 70% with category worth. The last aspect is device engineering soft on the aspect this gets an acquisition score of as many as 9 presentations averages by 90% with a very decent category. of several aspects the could produce average the overall e percentage is 81% with a very decent category.

Validation result expert Theory contains 2 aspects that is aspect material/content and language, on the aspect of material/content get an acquisition score of as much as 20 average presentations by 80% with category worth. Meanwhile, in the language aspect, getting an acquisition score of as many as 8 presentations averages 80% with category worth. From both aspects, they could produce an average percentage whole by 80% with category worth.

Stage of *dissemination* (dissemination)

Geomathfun learning media to class students 5 SDN Pesanggrahan 10 Pagi carried out on product trials. After the implementation of the learning, media is carried out, then an analysis is carried out related to the response of students to the learning media to be able to find out its quality. In the results of the assessment by students are several aspects, namely the first aspects of media use on aspects of this get a score as many as 478 average presentations by 92% with very decent category. On the second aspect which is aspect material on aspects, this gets an acquisition score of as much as 235

average percentage by 90% with very decent category. On the last aspect that is aspects of the learning process on aspects of this get acquisition score as much as 233 average percentage by 90% with very decent category. of the three aspects, they could get an average percentage of 91% with a very decent category.

DISCUSSION

GEOMATHFUN application contains building material that can be understood easily and there are also practice questions with various types of practice questions such as drag & drop, multiple-choice and short entries that can be done by students. Reason researcher choose to develop a learning Media interactive based on results Interviews with participants educate fifth-graders to feel they need the help of learning media that can make it easier to understand this material.

By his name, *GEOMATHFUN* has the meaning or meaning of learning to build mathematical spaces in a fun way, and from that name, it is hoped that grade 5 elementary school students can learn to build mathematical spaces in a pleasant atmosphere and can also easily understand the material. *GEOMATHFUN* was created using the help of the *Smart Apps Creator* software. The first step in making the application *GEOMATHFUN* for Step at first make a *flow chart* to deep start the manufacturing process structured. After that prepare ingredients like images, *videos*, and *buttons*. In making an application this researcher still feels many shortcomings, after application, this made conducted validation as ingredient evaluation.

Geomathfun learning media is a new experience in the learning process in mathematics, which brings many benefits and makes learning more fun. *Geomathfun* was created using the *SmartAppsCreator application. This SmartAppsCreator* application is indeed an application that is used in making a new application without any programming code. *SmartApssCreator* is a digital interactive media that can create multimedia content that can be installed on Android-based smartphones.

According to Harmita, (2004) validation is the activity evaluation of the media to prove that the media is worthy of its use. The development of *geomathfun* learning media includes media validation stages and also material validation. A validation test is carried out to determine the feasibility of a product. All of the media aspects assessed by the validator get a percentage of 81% with a very decent category. and all aspects of the material assessed by the validator get a percentage of 81% with a decent category. The media and material validator commented that the media and material presented were quite good but could be tested with revisions. After the revision is completed, then the *geomathfun learning media* can be applied in mathematics learning on the material of building space, which is carried out by class V of SDN Pesanggrahan 10 Pagi. After the implementation of the learning, 26 students assessed the media used by using a questionnaire. The results of the assessment obtained from students get a percentage of 91% with a very good category. Advantages of *geomathfun* are attractive appearance, innovative, creative, fun, and easy participant education in understanding Theory get up space. However, in something products certain there is a deficiency that is still there is *screen* video at the

beginning move looks and there are *bugs* in evaluation question that sometimes score his no to reset when repeat work matter.

CONCLUSION

It can be seen from the results and discussion, that the development of geomathfun interactive learning media on building materials has been successfully developed. The results obtained from the feasibility validation test by media validators get a percentage of 81% with a very feasible category. While the results of the validation by material experts get a percentage of 80% with a decent category. So that it can be concluded that the geomathfun interactive learning media is feasible to be used in mathematics learning activities on spatial material.

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