Flash-Based Flash-Based Mathematics Learning Media Case Study At Randugunting State Primary School Semarang District

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Abstract : Elementary School (SD) is the initial level of formal education implemented in Indonesia which takes 6 years. Elementary school students are generally aged between 7-12 years, at this stage the knowledge taught is basic knowledge which will then continue to be developed until middle school and high school. The lecture method used by schools in general and the use of companion books that are less interesting result in students being less able to understand Mathematics subjects, especially Flat Figures. The design of this learning media is to provide a solution for teaching Mathematics for fourth grade elementary school students in an easier and more enjoyable way. The problem faced here is how to design interactive learning media as an alternative learning media to support the teaching and learning process in schools for class IV elementary school that is easy to understand materially and makes it easier for students to see real things or objects. The method used is *Research and Development* (R&D). In connection with the problems being studied and preparations for formulating a research framework, at this stage, data collection is carried out by means of observation and interviews, then thinking about the product that will be produced by formulating research objectives, after that determining product specifications and making a research schedule for developing the initial form of the product. What will be produced is suitable for analyzing students' values and interests. The next step is to carry out initial field trials on a limited scale by validating the expert team to test whether the product is feasible or not. If it is not feasible, improvements will be made to the initial product produced. The manifestation of this research and design is an interactive multimedia learning CD. The overall results achieved are expected to increase added value to assist educators in providing interesting, fun and easy to understand mathematics education to improve the learning achievement of class IV students at Randugunting Public Elementary School, Semarang Regency.

Keywords: media, learning, mathematics, flat figures.

A. BACKGROUND

Progress in this modern era, the world of education has increased very rapidly. The teaching methods provided are increasingly varied or varied, this is done so that learning is more memorable and not always *monotonous* . In order to improve the quality of education to make it more advanced, information and communication technology is taking part in the world of education. Multimedia has greatly changed the way humans interact with computers by combining the media of text, images, visual audio, video and animation. In the field of publication, multimedia is one of the supporting media in conveying information effectively, as well as being more interesting in its presentation. Many companies have used multimedia to create company *profiles* with the aim of introducing the company so that it can be more widely known by the public.

The great potential of multimedia technology in changing the way people obtain information is very promising and effective. Multimedia also provides opportunities for

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educators to develop the learning techniques provided so that they are as acceptable as possible. In this way, the source of information is not only focused on books but can become wider.

Different levels of understanding of students require teachers to be more creative in delivering lessons. Teachers can use learning media as a means of teaching and learning in schools which aims to improve the quality of education. Learning media that is used appropriately can make abstract things concrete and complex things can be simplified, so that students' understanding of material can be improved (Basri, 2011).

Mathematics is a universal science that underlies the development of modern technology. Mathematics has an important role in various scientific disciplines so as to advance human thinking power. Mathematics subjects are given to students starting from elementary school to equip students with the ability to work together. Mathematics is one of the subjects included in the National Examination category.

Randugunting State Elementary School was founded in 1987, located in Randugunting village RT.01 RW.01 Bergas District. A public school that has adequate facilities, SD Negeri Randugunting has not utilized interactive learning media and still uses lecture methods or notes on books or whiteboards. Such conditions make students pay less attention to the teacher's explanations, as a result students sometimes do not understand the material provided. Using a whiteboard is considered less efficient because time is wasted taking notes, even though it is already available in the form of a student worksheet book for students to use as a guide.

B. Identification of problems

Based on the background of the problem above, the problems in this research that can be identified are as follows:

1. Students have difficulty learning mathematics.
2. Declining student scores in mathematics subjects.
3. Students experience difficulties and confusion in studying plane material.
4. There is a need for interactive learning media with an appropriate design for class IV students at SD Negeri Randugunting in studying flat shape material.

C. Formulation of the problem

Based on the background of the problem, identification of the problem, and limitations of the problem above, the formulation of this research problem can be determined as follows:

1. How can designing mathematics learning multimedia with the sub-topic material of flat figures be said to be valid?
2. How can learning mathematics with the sub-topic material of flat shapes according to the curriculum be effective in its application?

D. Restricting the problem

1. This research focuses on creating learning media for grade 4 students at Randugunting State Elementary School.
2. The curriculum used for the material is the 2013 curriculum (K13).
3. The material that will be discussed according to the title is mathematics learning for class 4, semester 2 which includes the topics of Polygons, Perimeter of Plane Shapes, Area of Plane Shapes, and Relationships Between Lines in accordance with the textbook used as a learning reference by teachers and students.

E. Research purposes

1. Producing mathematics learning media products with valid multimedia-based sub-topic material.
2. Producing mathematics learning media with effective sub-topics of flat shapes.

F. Benefits of research

1) For companies:
   a) Growing the interest and participation of Randugunting State Elementary School students in the learning process thereby improving the expected learning outcomes.
   b) To improve the learning process and outcomes of Randugunting State Elementary School students.

2) Benefit for writer :
   a) Fulfills the curriculum requirements for the STEKOM undergraduate level
   b) Applying the theory and knowledge that has been obtained at STEKOM .

3) Benefit for academic :
   a) As a library that becomes input in research for other students regarding creating learning multimedia.
   b) Participate in society to improve the quality of education.

G. Understanding Media

Media is anything that can be used to channel messages from the sender to the recipient so that it can stimulate students' thoughts, feelings, attention and interests in such

a way that the learning process occurs. Media in general is a tool to help the teaching and learning process. Anything that can be used to stimulate the mind, attention and abilities or skills of learners so that it can encourage the learning process. These boundaries are quite broad and deep, including understanding resources, environment, people and methods used for learning/training purposes (Zulkifli, 2012).

H. Understanding Learning

Aunurrahman (2010:35) concludes that "learning is a conscious effort made by individuals to change behavior through training and experience involving cognitive, effective and psychomotor aspects to obtain certain goals".

Learning implies teaching and learning activities, where those who teach are teachers and those who learn are students who are oriented towards teaching material activities that are oriented towards developing students' knowledge, attitudes and skills as learning targets. The learning process will include various other components, such as media, curriculum and learning facilities (Aunurrahman, 2010).

Learning according to Agus Suprijono (2011: 13) is defined as the teacher's efforts to organize the environment and provide learning facilities for students to learn.

I. Understanding Mathematics

Mathematics according to Ruseffendi (1989) is a field of study that can help shape children's personality so that they have creative, critical, scientific, honest, thrifty, disciplined and tough attitudes and traits.

Mathematics according to James and James (1976) is the science of logic regarding shape, arrangement, quantity and concepts that are interconnected with each other, with a large number divided into three fields, namely algebra, analysis and geometry.

J. Understanding Flat Shapes

Ika Wulandari (2013:1), states that a flat shape is a shape whose entire shape lies in one plane. This flat shape is a two-dimensional shape that only has length and width and is limited by straight or curved lines.

Fajar Wahyudi (2014:132-142), mentions various flat shapes, namely triangles, quadrilaterals (square, rectangle, parallelogram, rhombus, kite, trapezoid), and circles.

A flat shape is a shape in the form of a flat plane bounded by several line segments. Amount and segment models boundary line get up the determine Name And form get up flat the .

K. Understanding Multimedia

Multimedia is a combination of various media (*file formats*) in the form of text, images (*vector or bitmap*), graphics, sound, animation, video, interaction, etc. which have been packaged into digital files (computerized), used to convey or deliver message to the public.

According to Arsyad, A. (2014: 11) said that "The more five senses are involved or used to receive and process information, the greater the possibility that the information will be understood and retained in memory." So that multimedia can meet the needs of the five senses in understanding learning, and meet the needs of students' dominant learning styles

L. Product Specifications

1. Interactive multimedia-based mathematics learning media.
2. The types of learning media created are limited to media in the form of interactive multimedia learning *Compact Disks (CDs) which contain:*
   a. Text
   b. Image (image silent)
   b. Animation (fig move)
3. Instructional Media This be equipped with opening *(intro)* , introduction , body , conclusion , and be equipped exercise question And example question .
3. The learning media developed in this research is interactive learning media that contains animation, so its use requires minimum specifications:
   a. Intel Pentium III 2.8 GHz
   b. Memory 512 MB
   c. Hard Disk with Minimum free space 100 MB
   d. Mouse
   c. Keyboards
   d. Speaker

M. Development Methods

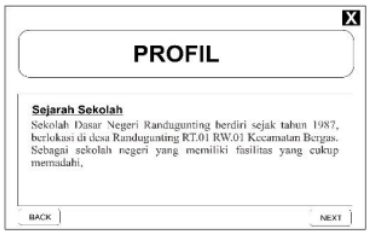
The type of research used in this research is research and development or in English Research and Development (R&D) is a research method used to produce certain products, and test the effectiveness of these products Sugiyono (2014:407). To produce certain products, research is used in the nature of needs analysis and to test the activity of a particular product.

N. Trial Design

1) Initial display

2) Home/ *Home* display

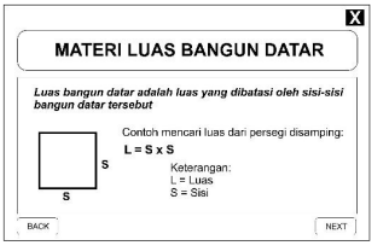
3) Profile view



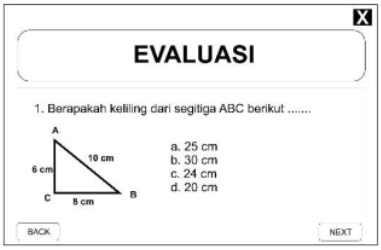
4) Material display

e-ISSN: 2987-9434; p-ISSN: 2988-0343, Hal 57-67

5) Display material examples



6) Evaluation view



7) Completed View

O. Final Product Discussion

- *Opening* display

- Main *menu* display

- Material display

- *Game* display

- Evaluation view

e-ISSN: 2987-9434; p-ISSN: 2988-0343, Hal 57-67

- Profile view

- *Outro* view

P. CONCLUSION

In research that has been carried out with the title "Adobe Flash Based Flat Building Mathematics Learning Media Case Study at Randugunting Public Elementary School, Semarang Regency" it can be concluded that:

1. This research produces a product in the form of interactive learning media for semester 2 material. The stages carried out to produce interactive learning media are as follows: a) information collection stage; b) planning stage; c) development stage; and d) validation and testing stages. The material in the learning media consists of two sub-materials: area and perimeter, polygons, flat shapes and relationships between lines. Instructional Media Also be equipped with question evaluation .
2. Based on the results of internal and external validation tests, this learning media received a score above 3.3, this criterion is between 3.26 - 4.00, which is classified as very valid. So this learning media can be said to be feasible and suitable for use as a learning resource for Randugunting State Elementary School students.

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PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10

PAGE 11