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DEVELOPMENT OF LEARNING MEDIA BASED MACROMEDIA FLASH ABOUT TRIANGLE FOR STUDENT GRADE 7 JUNIOR HIGH SCHOOL

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Abstract

The research objective is to produce media-based math learning macromedia flash on the subject of triangles in class VII SMP valid and practical in order to see the potential effects macromedia flash media-based learning subject triangles on student understanding of the concept. Valid drawn from assessment results validator, which is expressed both by the content, language and constructs. Practical illustrated how users use macromedia flash media-based learning subject triangles. The research method used is a development research that consists of three phases: analysis, design, and evaluation. The data was collected through document analysis, and test. Research trials conducted at SMP 54 Palembang VII.6 classes involving 40 students. Obtained from testing the potential effects of learning using macromedia flash media on the students' understanding of concepts 78 in both categories. It can be concluded that the macromedia flash media-based learning subjects that researchers develop effective triangle used in the study of mathematics.

Keywords: *development research, triangle, macromedia flash*

INTRODUCTION

Within the framework of 21st century competencies expected of students information literacy, media literacy, and literacy Information Technology Communication (ICT). Curriculum 2013 is based on the paradigm of 21st century learning, the design states that the curriculum structure of SMP computers would be the means on all subjects. This is the basis of computer-assisted learning media need.

Flat figure is one of the essential materials in mathematics at the Junior High School (SMP) grade 7. Up flat material is a starting point for students to study up space in the Grade 8 and 9 junior. One subject in the wake material is flat triangle. The basic competence (KD) to be achieved in this material are:

1) Identify the types of triangles
2) Lowering the formula for the area and perimeter of triangles
3) Painting triangle
4) Resolving issues related to daily life

Based on the competence of teachers should create learning math interactive and fun. The atmosphere is expected to attract the attention of students to learn to understand the material triangle.

Before conducting the research, has conducted interviews and analysis of student test scores for the triangle and the material showed only 3 students who received grades ranging between 80-89 with a percentage of 8.6%. While 29 students scored below 76.

Effort that will be done is through the media that varied and innovative, with this expected to foster a sense of fun and love of learning mathematics. Instructional media is considered suitable and innovative computer-assisted learning media.

Hamalik (in Arsyad, 2011) suggests that the use of instructional media in teaching and learning can generate new desires and interests, generate motivation and stimulation of learning activities, and even had an impact - psychological effects on students. Sudrajat (2010) argues that the media has a function as a learning tool for teachers to clarify the message. Media also works for individual learning where media notch fully serve the needs of students.

Various studies have been done on the use of instructional media in teaching and learning to the conclusion that the process and the learning outcomes of students showed a significant difference between learning without learning to use the media to media. Therefore, the use of instructional media in teaching and learning is highly recommended to enhance the quality of learning including computer media (Sudjana and Rival, 2011).

To make the learning of mathematics is better than the previous study in which only describes the material without the material linked to the life around students, this research will be applied in contextual learning in math. With contextual learning, students are expected to be more interested and active in the learning of mathematics as well as obtaining student learning outcomes better. According Suherman (2003), "contextual learning is a learning approach that starts by taking (simulate, to tell) events in the real world in everyday life experienced by students was then appointed to the mathematical concepts covered". Meanwhile, according to Sanjaya (2008:255), "Contextual Teaching and Learning (CTL) or contextual learning is a strategy that emphasizes the process of student engagement in full to be able to find the material studied and relate it to real life situations that encourage students to be able to implement it in their lives ".

So, contextual learning is a process oriented learning experience directly, so that the material received by the student will not be easily forgotten. It is also expected with contextual learning what students have learned as a result of being more durable embedded in students because students are exposed to issues that are not far from his life and encouraged to be active in building understanding and skills to be had.

Research Question

1. How to develop media-assisted learning macromedia flash valid and practical to subject the triangle?
2. How does the potential effects of media developed learning on learning outcomes?

Aim

1. Produce computer-assisted learning media triangles using macromedia flash on the subject of triangles for class VII SMP

2. Knowing the potential effects on learning outcomes of students after participating in learning with media-assisted learning triangle macromedia flash on the subject of triangles for class VII SMP

Method

This research uses methods development research (Research Development). According Akker (1999), there are three quality criteria are:

a. Validity (experts and peers) a good validity if it is listed in accordance with the learning content according to the indicators of learning.
b. Practicality means the resulting product is easy to use by users in this case students and teachers.
c. Effectiveness means the achievement of learning objectives seen from learning outcomes.

Development of computer-based instructional media following the two main stages of development research is preliminary study phase (preparation phase and stage of development) and formative study (phase evaluation and revision phase). The following step-by-step development of computer-assisted learning media subject triangles, based on the form of the flow chart in Figure 1 below

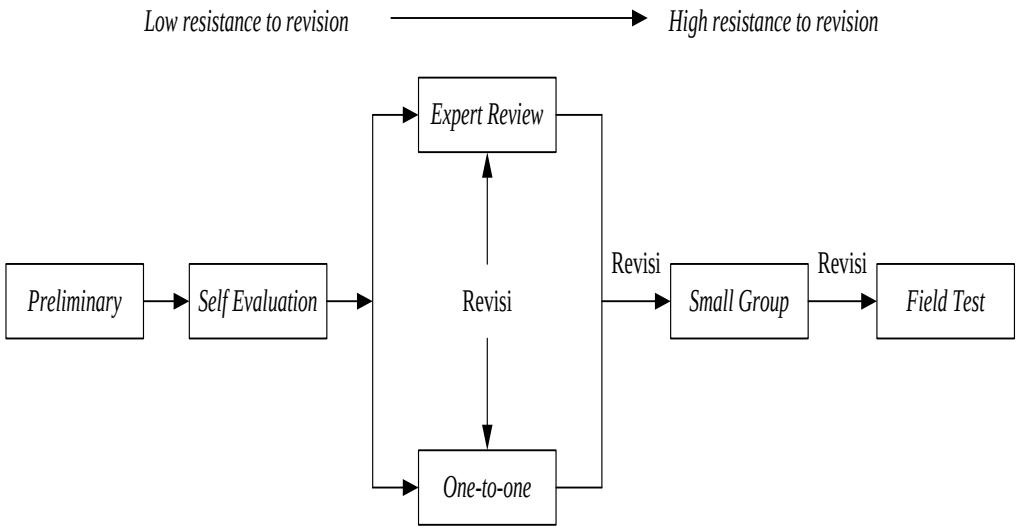

Figure 1. Tessmer formative evaluation design flow (in Zulkardi, 2002)

MAIN SECTION

Analysis

At this stage of the analysis the material that will be developed using macromedia flash segitiga.Tahap the material is intended to identify and choose essential material that will be displayed on instructional media using macromedia flash. Then the stage was followed by making flowchart that aims to determine the sequence of learning materials that will be displayed on instructional media, as well as determine what materials can be made up in the form of geometric animation and simulation.

Desain

Paper Based

At this stage the subject matter on triangles and designed on paper, both the draft form of text and images. This stage aims to gain an overview of what will be shown on computerbased using MACROMEDIA program. The main menu consists of three subjects, namely the types of triangles, area and perimeter of a triangle, and triangles painted. Instructional media created a structured instructional media, meaning that students must follow the slide per slide material contained in the media so that the learning process effectively according to the approach used is contextual teaching and learning approach (CTL) which also includes seven components of constructivism (constructivism), find (inquiry), asking (questioning), community learning (learningcommunity), modeling (modeling), reflection (reflection) and the actual assessment (authenticassessment). Figure 2 below is an example of the results of the paper based designs.

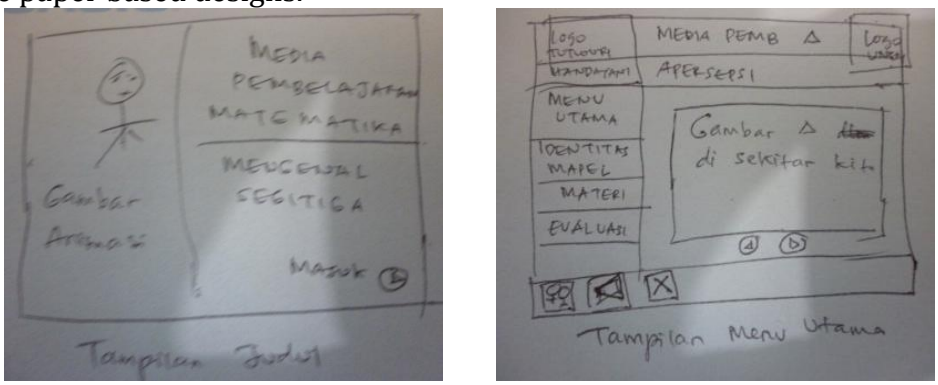

Figure 2. Result of *Paper-Based*

Computer Based

At this stage the product design which has been made in the paper based manifested in a computer based. The program used to design computer-based products are MACROMEDIA program. Products are designed in a computer based prototype1. Prototype1 shown is focused on three main characteristics (content, support and interface). Figure 3 below is an example of computer based product design for prototype 1. The results of designing called a prototype 1.

Figure 3. Computer based results

Expert Review

Expert stage involves some validators are Dr.Marcelinus Andy Rudhito from Yogyakarta, Dr.Rusman Hasan from Indonesia University of Education (UPI), Dr.Endang Mulayana from UPI, Yose Rizal Drs.Yoan a senior math teacher, and Mery

Trisia, S.Pd . a seventh grade math teacher SMP 54 Palembang. Here are some comments from the prototype validator 1 which has been developed.

The validation process is done via email and walkthroughs. Validation via email that the Dr.Marcelinus, Dr.Rusman, and Dr.Endang. while validation through a walkthrough with Drs.Yoan Yose Rizal and Mery Trisia, S.Pd.. Based on test validation by experts, peers and teachers of mathematics, it can be concluded product design teaching materials (prototype1) developed already quite good (valid and practical), although of course still necessary improvements brdasarkan suggestions validator. The suggestions are used as a reference for the development prototype2.

One-to-one

At this stage prototype1 was tested on a one-to-one along with expert stage. Prototype1 is tested on two students of class VII SMP 14 Palembang named Meiliza and Iqbal. This trial was conducted in order to see the difficulties that may occur during the process of learning to use these materials, so as to provide an indication of whether the instructional media needs to be repaired or not. In the process students are given media teaching material contains a triangle. Learning is done by using a laptop.

At the time of observation of student learning occurs. Based on observations during learning activities can be concluded that the students still operate media teaching difficulties using the computer because there is no guidance in the use of media. Students are also asked to answer some questions about the subject of media learning triangle. Students' answers will be used as a reference to improve the prototype 1. Based on the answers, comments, and suggestions provided students then in general it can be said that prototype1 already quite good and practical prototype. In addition, students are also asked to complete the test questions that have been prepared. From the test results, obtained by the student test scores is 78 so it can be concluded that the potential effects from instructional media that have been made well enough to students' understanding of concepts.

Revisi *Prototype* 1

After stage one to oneselesai expert and, based on the suggestions from validator and test results one-to-one, then the product from design prototype1 revised in order to obtain better learning media which was then referred to as prototype2. The following Table 1 which contains the changes before and after the revision based on the results of the validation and testing of one-to-one.

Table 1. Changes in Before and After Revision For Prototype 1

Suggestions	Before Revision	After Revision
1. Fix post at the beginning of the media, for readability.	1. . At the beginning it says "Enjoy your learning" closed / overlap with the words "Developed by ..."	1. The words "Enjoy your learning" repaired and manufactured not to accumulate with the words "Developed by ..."
2. Image for the icon menu key learning objectives are less precise.	2. answer key connotation. On the menu of learning objectives is used as	2. buttons. Icons for the menu button is replaced with an image of learning objectives compass

	an iconic image kunnci	
3. Picture flickering white pentagon on the top right position is less precise, because sometimes cover	3. At the material contained pentagonal flashing animation and text covering the material so difficult to read	3. Flash animation was removed
4. No material is lost and there is material that is not in accordance with the syllabus	4. Triangle on the material, the material "relationship with the side length of the triangle corner" first sheet blank. Besides, the material "translational field" does not seem appropriate.	4. Missing material be reloaded while the materials 'transalasi the deleted field'
5. There is no example about	5. On material no examples of problems and also the problems in the contextual everyday life	5.Ditambahkan example problems and questions of contextual
6. Have not there are exercises and discussion	6. In media, have not quation and discussion exercises	6. Added exercises
7. Quality of text display on the matter has not been optimal, there are certain parts that are less clear on the matter	7.Tampilan text look blurry so hard to read	7. Improved text display material

***Prototype* 2**

At this stage, prototype 1 revised, resulting in a prototype 2. Here is a picture 4 that is a prototype 2.

Figure 4. prototype 2

Small Group

This stage aims to look at the practicality and effectiveness from prototype 2. Prototype 2 testing conducted on students with learning form small discussion groups (smallgroup) which consists of 4 students of class VII SMP 14 Palembang. Small group learning trial was held on March 2, 2013 using a laptop. Data obtained

from this small group are comments from the students, observation data, and test results from learners. Figure 5 below is a small group activity.

Figure 5. Student Small Group

Final of the study they did, they were asked to do the questions dealt evaluation, learning outcomes can be seen in Table 2 below.

Table 2 Result Study of Trial Prototype 2

Scor	Frekuensi
80 – 100	4
66 – 79	1
56 – 65	0
40 – 55	0
0 – 39	0
Average	82

Based on the results of the average score of the results of learning, it can be concluded that the instructional media developed prototype 2 in both categories.

Revision *prototype* 2

Based on trial results and enter the small group of students, then the product is revised design prototype 2 which aims to correct deficiencies in order to produce a prototype 2 prototype3. Here are the changes before and after revisions based on the results of small pilot group contained in Table 3.

Table 3. Changes in Before and After Revision

Suggestion	Before Revision	After Revision
Quiz question pack much less variation	Quiz questions centered on the circumference and area of a triangle	Added to other matters, including the matter of applications in everyday life
Biodata incomplete	Author profile on the menu, only the name and agency	Profile is made more complete by adding photos, moto, education, place and date of birth.
Have not contextual material	The material is only glued on student textbooks.	Repaired and made contextual material
Add menu instructions for using the media	Instructional media does not make use of the instructions menu so confusing users	Added menu instructions for using the media

Aims of prototype 2 revision to improve the deficiencies in order to produce a prototype 3. Prototype 3 is considered as instructional media design products that meet both criteria are valid and practical quality. The following figure 6 as a result of the development of prototype 2 produced a revised prototype 3.

Figure 6. Results Revised Prototype 2

Result of *Field Test*

Having obtained a valid and practical prototype3, then performed field trial test to see potential effects on learning outcomes. This stage contains only test the effectiveness of a prototype 3. At this Prototype3 practicality is not tested yet, because the second prototype has been developed teaching materials that meet practical criteria. The trial took place from 2013 to 11Maret March 15, 2013 in class 54 VII.6 SMP of Palembang. Learning implemented in 4 meetings, where the meeting of the 1st, 2nd and 3rd implemented in a multimedia learning SMP 54 Palembangdan 4th meeting that the execution of tests carried out in the classroom.

Form of learning is done based learning Contextual Teaching and Learning (CTL), where the teacher acts as a facilitator. In this lesson, students formed into groups with each member of the group amounted to 2 to 3 people. In this study each group is given using a computer instructional media and also given the activity sheet to answer the questions related to the material contained in the instructional media.

Instructional media development process tailored to the contextual teaching and learning (CTL) which are taught in the media there is a group of activities in accordance with aspects of the learning community, the material prepared to lead students to understand the concept of the triangle so that students can work on exercises and group activities can conclude that the results of the learning process according to the characteristics of the CTL constructivism and inquiry. On teaching media is now quite awake or images that can be used as a model, while for reflection and assessment can actually take a look at the practice questions to measure the achievement of learning objectives.

Table 4. Student Results in Field Test

Scor	Frekuensi
80 – 100	20
66 – 79	14
56 – 65	5
40 – 55	1
0 – 39	0
Average	**82,6**

From Table 4 above shows that the learning outcomes of students with good category Once 50%, 35% Category Well, just 12.5%, less 2.5%, and the Very Bad 0%. At trial prototype3 there is no learning outcome of students belonging to the Poor category.

If the percentage of students seen of mastery learning outcomes set by the mathematics teacher at 71, then 85% of students completed the triangle are learning to understand the material using instructional media with macromedia flash.

Based on the results of the average score of the results of learning, it can be concluded that the third prototype that has been developed well categorized.

CONCLUSION

Based on the research results, it can be concluded as follows:

1) Computer-based interactive learning media subject triangles in Junior High School meets the criteria developed valid. Valid seen from the results of the assessment validator, all validators states where either based content, and language constructs. While looking at the practicality of these materials has also been declared a practical, it is seen from the results of tests on one to onedan small group. At trial one to one gained an average of student learning outcomes is equal to either category and the results of student activity with the active category. While the small group gained an average of both categories of student learning outcomes and the results of student activity that is categorized as very active.

2) Based on the filed test is known that interactive computer-based instructional media subject triangles in Junior High School has a potential effect on student learning outcomes. This can be seen results of the students' final grade achievement category 50% excellent, 35% good category kateori enough while 12.5%, while the activity is equal to 27.45% of students are very active category, 45.10% and 27.45 active category % moderately active category.

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