

# The Effectiveness of using Computer-Based Multimedia in Teaching Geometry at Junior High School

Sufri Mashuri

Corresponding author email id: [sufri13@gmail.com](mailto:sufri13@gmail.com)

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**Abstract** – Learning by using multimedia can make students more attention when teachers teaching, so student's learning outcomes can be better. The purpose of this study is to determine the effectiveness of the use of computer-based multimedia learning in teaching geometry at junior high school. This study was conducted to provide innovation on teacher models, strategies and methods to achieve the objectives and learning outcomes. The design of this study is of pre-experimental research with one type of treatment or One Group Pretest-Posttest.

The results by using t-test was t-count as 29.552, while the value of t-table as 0.67627. Because t-count  $\geq$  t-table the conclusion is "there is a significant difference between pretest and posttest value". The average value of pretest was 71.7536 while the posttest was 76.4565. Based on the result of t-test and the mean value of learning result, it can be concluded the result of student learning after being taught by using computer-based learning media on material geometry better than before using computer-based learning media.

**Keywords** – Effectiveness, Multimedia, Geometry, Learning, Media.

## I. INTRODUCTION

Mathematics is a universal science that underlies the development of modern technology, has an important role in various disciplines and development of human mind power. In this case, everyone has different interests and views about math lessons. Some see mathematics as a fun lesson for those who are very interested in learning math and others who see mathematics as a difficult lesson.

Based on information from Junior High School Mathematics Teachers in Kolaka that following MGMP 2016, the researcher found that students had difficulties solving mathematical problems for geometry materials, in this case the geometry of the junior high school was triangle, rectangle, circle, and wake up space. To overcome these problems, it requires the use of creative and innovative multimedia learning that leads to Active, Creative and Joyful Learning (PAKEM), so that the learning atmosphere is more lively, fun and not boring. Perhaps computer-based learning media with more contextual material can be used to improve junior high school students' learning outcomes, especially in geometry.

## II. LITERATURE REVIEW

### 2.1.1. Definition of Learning Media

The word "Media" comes from the Latin language which is the plural of "medium", literally means intermediary or introduction (Nurseto, 2011: 20). The Association for Education and Communication Technology (AECT) (in Nurseto, 20: 2011), defines the word media as any form and

channel used for the information process.

In general, learning media in education is called media, the various types of components in the student environment that can stimulate it to think (Gagne, in Budi 2011). Briggs (in Tryanto, 299: 2013) states the media is any physical tool that can present a message as well as stimulate students to learn. According to Antero (2016) media is an intermediary channel message/ information that can stimulate students to find the desire to learn. Media is a tool used by teachers with designs tailored to improve the quality of learning (Musfiqon, 2012: 28). According Latuheru (in Istiyanto 2011) states that the learning media is materials, tools, or techniques used in teaching and learning activities with the intention that the process of interaction of educational communication between teachers and students can take place appropriately and efficiently. Based on the understanding that has been given, the learning media is everything that is used in the learning activities that function as a channel of information/ messages that can stimulate the thoughts, feelings, interests, and attention of students so that the process of interaction of educational communication between teachers and students can take place efficient and efficient.

### 2.1.2. The Benefit of Learning Media

Learning media has some practical benefits in the learning process as proposed by Arsyad (in Antika, 2016), as follows :

1. Able to clarify the presentation of messages and information so as to facilitate the process and learning outcomes.
2. Able to improve and direct the attention of students so that it can lead to learning motivation.
3. Able to overcome the limitations of the senses, space, and time.
4. Able to provide common experience to students about the events in their environment.

The benefit of learning media according to Nurseto (2011) as follows :

1. Equalizing Student Perceptions by looking at the same object and consistent then the students will have the same perception.
2. Concretely abstract concepts. For example, to explain about the system of government, economy, wind blowing, and so forth. And also can use the media images, graphics or a simple chart.
3. Presenting objects that are dangerous or difficult to get into the learning environment. For example, the teacher explains by using pictures or movies about wild animals, volcano erupts, oceans, northern pole etc.
4. Displays an object that are too large or small. For example the teacher will convey the description of a ship, airplane, market, temple, and so forth or display

objects that are too small such as bacteria, viruses, ants, mosquitoes, or animals/ other small objects.

Shows movement that is too fast or slow and by using slow motion techniques in the film media can show about a bullet trajectory, darting arrows, or showing an explosion. Likewise, too slow movements such as growth of sprouts, blooming wijaya kusumah and others.

### 2.1.3. Computer Based Learning

Around the middle of the 20th century visual utilization began to be equipped with audio, so that the birth of audio-visual aids, in line with the development of science and technology, currently the use of tools, especially in the field of education becomes increasingly widespread and interactive, such as computer and internet utilization (Triyanto, 230: 2013). Learning related to IT and now the attention of the education world is Computer Based Learning model (computer based instruction). Computer-based learning is learning that uses computer as a tool (Wena, in Purwanto, 2015). Through this learning the teaching materials are presented through computer media so that the teaching and learning process becomes more interesting and challenging for the students.

According to Hick and Hyde (in Purwanto, 2015) explain that with computer-based learning learners will interact and deal directly with the computer individually so that what is experienced by a learner will be different from what experienced by other students. One of the most interesting features of computer-based learning lies in the ability to interact directly with learners.

Based on opinion that explain before, it can be concluded that computer-based learning is teaching and learning activities conducted by teachers/ lecturers with computers as a tool in delivering learning materials so that learners are not bored and motivated in following the ongoing learning activities in the classroom.

## III. METHOD OF THE RESEARCH

Type of this research is a pre-experiment with one type of treatment, namely learning mathematics by using computer-based learning media. In this research investigated is the mastery of mathematics teaching materials with geometry material. The hypothesis of this research is the result of student learning after being taught using computer-based multimedia learning for material geometry better than the student learning outcomes before being taught using computer-based multimedia learning.

The design of this research was one group pretes-posttes where in the sample that has done pretest before given treatment and posttest after given treatment (Sugiyono, 2009: 110). The research design is illustrated by the following scheme:

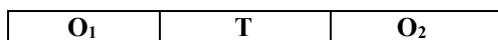


Fig. 1. Design of the Research

Where:

$O_1$  = Pretest.  
 $T$  = Treatment.  
 $O_2$  = Posttest.

The data collected in this research were analyzed using descriptive statistical techniques and inferential statistical analysis.

### 1. Deskriptive Analysis

Data that relating to this research are processed using descriptive statistical analysis, as follows:

- a. Student's activity.
- b. Student's response to learning.

### 2. Statistic Inferential Analysis

Inferential statistics were used to test the hypothesis, for this purpose a t-test was used, using the SPSS program.

## IV. RESULT AND DISCUSSION

From 138 students divided into 5 classes that became the sample in this study, generally responded positively. This is seen from 77.3% of students feel happy and very happy about the subject matter, 79.5% of students feel happy and very happy about the way of learning, 70.4% of students feel happy and very happy with the way teachers teach, 72.7 % of students are interested to participate in learning activities, and 77.3% of students have no learning difficulties.

The result of using T-test was t-count is 29.552, while the value of t-table was 0.67627. Because the value of t counts  $\geq$  t-table then concluded a significant difference between. The average value of pretest was 71.7536 and the posttest was 76.4565. Based on the result of t-test and mean score of learning result we can concluded that the result of student learning after taught by using computer-based learning media on material of geometry better than before using computer-based learning media. It can be concluded that computer-based learning is teaching and learning activities conducted by teachers/ lecturers with computers as a tool in delivering learning materials so that learners are not bored and motivated in following the ongoing learning activities in the classroom.

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## **AUTHOR'S PROFILE**



**Sufri Mashuri** was born on 13 November 1979 in Soppeng. He completed the bachelor at Universitas Negeri Makassar on 2004 on the Mathematic Education. On 2008 he continue at Post Graduate Program at Universitas Negeri Makassar at Mathematica Education and finished on 2010 and now he is one of the Mathematic Educational Lecturer at Sembilanbelas November University of Kolaka, South East of Sulawesi – Indonesia. The author also active in several research, some of the author are the effectiveness of cooperative learning STAD type by applying Van Hiele theory in geometry teaching and the Improving of learning result of calculus course through visual media student's of Sembilanbelas November University of Kolaka.