

**USING MACROMEDIA FLASH IN IMPROVING STUDENTS' ACHIEVEMENT AND  
LEARNING ACTIVITIES OF GEOMETRY AT GRADE IX OF MTsN SUNGAYANG  
ACADEMIC YEAR 2010/2011**

**Rozi Fitriza**

Department of Mathematics,  
Faculty of Education, Imam Bonjol Islamic State Institute, Padang

**Abstract**

Geometry is one of lessons that teachers and students often complain with. Teachers, sometimes, do not optimally use teaching media, while a better way to teach geometry is through media. Macromedia Flash is one of computerized media that can be used to teach geometry. This paper discusses a research report about the implementation of macromedia flash in learning mathematics (geometry). The result of this study is that the students who are taught through using macromedia flash shows better result in geometry than they are who do not. Moreover, the research also found an increasing on student activities that are taught through macromedia flash.

**Keywords:** *Macro media flash, learning, activities*

**Introduction**

Learning geometry at school is expected to give a systematic manner and habit for students in describing relationships between building geometry and classifications of the wake. In this case, providing an adequate opportunity to students and the use of media are necessary in teaching geometry so that students can observe, explore, practice, and find the concepts of geometry through informal situation to formal situation then applying the concept in real life activities. Compared with some other concepts in math curriculum, geometry gives more opportunities for students to conduct exploration, observation, and discovery in each level of learning, especially if the available activities and tasks are challenging to them (Sabandar, 2002, p. 467).

If the teaching geometry concepts and learning materials are not matched, it will cause less achievement of students in geometry. Abdussakir (2002, p. 344) states that: among the various concepts of mathematics, geometry becomes strongly emphasized since the results of studying it do not yet come to a satisfied result. Students get difficulty in learning the concepts since elementary level to university level. These difficulties cause students' lower understanding on geometry concepts then moreover it also cause students difficulty in learning geometry to the next concept of geometry. There are some factors affects these difficulties such as students' lower motivation and teacher lack of strategy in teaching geometry concept which makes the students feel saturated with mathematics.

When doing an observation at school, the researcher observes that the students seem to be difficult in finding an appropriate formula and appropriate space of geometry concept. The students tend learn the concept to memorization; surely it will influence their inadequate understanding of the concepts. It is indicated by student's inability in find the solution to other geometry problems given by the teacher. Similarity in the material, students learned in grade IX also seems to be lack understanding of the concept of students. Students often get mistakes in determining the sides of a comparable angle, which resulted errors in solving the given problem.

The problem above requires an innovation in learning, such as the use of computerized media in learning. This is in line with Clements statement (1989:267-268) that "learning geometry through computerized media is important to apply, because it is believed it can increase students interests and challenging to practice the concept it. It is as a result of making an abstract concept to become concrete to the students through the media".

Using visual media in learning is important as what the prophet Muhammad SAW ever did in teaching his followers (Abdullah, 2008; 52). Moreover Abdullah describe the way the prophet taught his followers as follows:

1. Using gestures to describe things
2. Using paraphrasing and story
3. Drawing a picture to explain specific things
4. Telling a folk story about previous ancestor

From observation, researcher found that MTsN Sungayang is still lack of using media in teaching geometry. While, actually students really need a media which can show and explain the shape of geometry to make them understand the concept. Otherwise, computer-based instructional media are and projector available there, but the teachers do not make use of the computer based instructional media to explain the lesson. The school has already equipped with Informational and Communication Technology (ICT) facilities but it is not really utilized by math teachers there.

The phenomenon above have come an researcher's eagerness to conduct a research about the use of computerized based instructional media specifically using Macromedia Flash in teaching IX grades students MTsN Sungayang. The program is in the form of animation which is more attractive than the existing animation in the Microsoft Power Point Program. Animation geometry especially for congruency up even can show students why a flat wake is uniform in terms of these elements build up to the discovery of the formulation of the concepts. Thus mathematics appears more attractive and not become a boring subject.

### Learning Media

The media largely consist of human, material or events that establish conditions that enable the child to acquire knowledge, skills and attitudes (according to Gerlach and Ely in Azhar, 2004; 3). Meanwhile the AECT (Association of Education and Communication Technology, 1997) defines media as all forms of media and channels used to convey information. So the media are a tool of learning inside and outside of the classroom in the context of communication and interaction of teachers and students in the learning process.

The learning process requires two essential elements, they are the methods of teaching and learning media. The selection of a particular teaching method will determine the selection of learning media. The use of instructional media to provide practical Benefits include:

1. Clarifying the delivery of information, thus allowing smooth PBM and increasing learning outcomes.
2. Increasing attention and motivation of students because it can interact directly with their environment (overcoming the passive nature of the student).
3. Overcoming the limitations of the senses, space and time.
4. Providing equality of experience to the students about the events in their environment.

Recognizing the importance of media in learning, improvement and development of media continue to be done. Initial development began with the classification of experience from the most concrete to most abstract by Edgar Dale, known as cone experience (Cone of experience). The more concrete an experience or the media is the more sensory devices gets involved. The involvement of sensory would obtain a direct impact on the generation and growth of knowledge, skills and attitudes. On this basis it continues to develop instructional media that demands more involvement of students' senses, while considering the times and technology.

The oldest technology which is used in the learning process is the printing that works on the basis of mechanical principles. Then, nowadays, it comes to the audio visual technology that combines mechanical and electronic discovery. The latest Emerging technology is microprocessor technology that gave birth to the use of computers and interactive media. Technology-based computers store information in digital form and present it through a glass screen. Computer-based technology applications in learning known as (CAI = Computer-assisted instruction), which includes tutorials (the stream of the lesson), drill and practice (exercises), game and simulation (application) and database (acquisition information).

### **Computer-Based Media**

Along with the development of civilization and technology which bringing a positive impact on learning, one of them is using computer as a medium of learning that can be very helpful support the learning process and learning acquisition. For these several years, learning programs through using computers more widely used. Computers have great attention because of its ability to be used in learning activities with the speed of mastery of the material that can be regulated solely by the wearer.

The main characteristic of computer-based technology (Seels and Richey, p. 43) are as follows:

1. Can be used at random and linear.
2. Can be used as desired learners and designers.
3. The idea expressed in abstract terms through symbols and graphics.
4. Principles of cognitive science principles applied to submarine development.
5. Learning to focus on students with high interactivity.

According to Roestiyah (1998:154), the computer has more power than the skills of teachers, because the computer can:

1. Saving the opinions of various information
2. Selecting the information with high speed
3. Presenting the students with a diagram that challenges
4. Give each student needs answers
5. Provide feedback to individual students as soon as possible
6. Has a number of differences with the different students.

In some studies that have been implemented (Funkhouser, 1993; Henderson and Lanersman, 1992, Chazan, 1988; McCoy, 1991; Al Ghamdi, 1987) in Tengku Zawawi bin Tengku Zainal found that:

1. Students who use computers in mathematics have a more positive attitude toward himself as a mathematician and attempt to resolve the problem more complex.
2. Fill out program in computer used in teaching process will help students understand the concepts and principles of mathematics with ease and impressed.
3. The achievement of students in the final examination showed a noticeable improvement.
4. A collection of computers have the ability to help students store information longer than they usually did

### **Macromedia Flash**

Senoaji (2006) in his ideas says that "Macro media flash software which is currently the most popular in the percentage of multimedia for advertising purposes, photo slide, slide presentation, and video. In addition, this application can also be used to create animated logos, movie, and the games attract a small file size.

Macromedia flash program is an application program used to create animations. Movie Flash MX consists of graphics, text, animation, and applications for web sites." With regard to the matters to be discussed in this writing that is the subject of congruency up even, then Macromedia Flash is very supportive of learning both in the form of animated images.

### **Research Methodology**

This research is an experimental research. In this study the treatment is given to the class with the use of the media program Macro Media Flash. While the control class is not given any treatment or in other words, the controlling class does not use the Macro flash media.

The population of this research is all IX class student MTsN Sungayang registered in the first semester of academic year 2010/2011, which consists of 3 classes. Based on the test, it was obtained that the population with normal distribution, homogeneous and have the same average. The sampling is random sampling which is randomly designed by doing lottery to the population,

with the first provision picked up was an experimental class and the second is the control class. The experimental class is elected class while controlling class is selected IXB IXC class.

Instruments in this study consisted of observation and test results of learning. This observation sheets filled every meeting by the observer to give an indication (Tally) on each indicator of activity that appears. From this observation sheet, it will find how the increase or the decrease of students' learning activities during the instructional math media by using Macromedia Flash. Tests are given in the form of test descriptions, to know the students' cognitive achievement of competence in the material similarity (homogeneity students).

Data obtained from observation sheet were analyzed with a formula proposed by Sudjana percentage (1990:130), namely:

$$P = \frac{F}{N} \times 100\%$$

Description: P = Percentage of activity

F = Number of students who do activities

N = Number of students

Category rating according to Dimiyati and Mudjiyono (2006:15):

1. If the percentage assessment of the activity is 1% - 25% means the activity is relatively very low
  2. If the percentage assessment of the activity was 26% - 50% means the activity is relatively low
  3. If the percentage assessment of the activity is 51% - 75% means the activity is relatively high
  4. If the percentage assessment of the activity is 76% - 100% means the activity is very high
- The hypothesis is tested by using T test.

### Implementation Stage

**Tabel 1. Implementation stage of experimental calss and control class**

Num	Experimental Class	Control Class
1	<p>Introduction</p> <p>a. Teacher controls students attendance and readiness. Then teacher doing apperception and let the students know about the goals that they have to achieve with the lesson classiscally.</p> <p>b. Teacher explain the students about the learning strategy which will be used that is by using <i>Macro media flash</i></p>	<p>Introduction</p> <p>Teacher control students attendance and readiness. Then teacher gives apperception, motivation and let the students know about the goals that they have to achieve with the lesson classically.</p>
2	<p>Main Activities</p> <p>Exploration: Teacher explains the lesson through <i>Macro media Flash</i>. Teacher gives several problem samples by using <i>Macro media Flash</i></p> <p>Confirmation</p> <p>a. Teacher gives opportunity to the students to rise questions</p> <p>b. Teacher check students comprehension and ask one of them to reexplain about his/her comporehension on the lesson</p> <p>Elaboration</p> <p>a. Students take a note about the lesson that already explained</p> <p>b. Teacher gives students several excercises</p> <p>Confirmation</p>	<p>Main Activities</p> <p>Exploration: Teacher explains the lesson in fornt of the class and gives several problem samples thourg white board</p> <p>Confirmation:</p> <p>a. Teacher lead a discussion with the students by giving questions and answer about the lesson which has already explained.</p> <p>b. The teacher gives students opportunity to answer the question which is cited by another students.</p> <p>Elaboration</p> <p>a. Students take a note about the lesson that already explained</p> <p>b. Teacher gives students several excercises</p>

Num	Experimental Class	Control Class
	Teachers asks several students to come to infront of the class to do the exercrise given	Confirmation Teachers asks several students to come to infront of the class to do the exercrise given .
3	Closing a. Teacher with students summarize the lesson and give emphasize on the important ideas or key words of the lesson b. Teacher gives students several questions in form of quiz to the students c. Teacher gives the students Home Work dealing with the lesson given d. Teacher asks students to read the next lesson at home.	Closing a. Teacher with students summarize the lesson and give emphasize on the important ideas or key words of the lesson b. Teacher gives students several questions in form of quiz to the students c. Teacher gives the students Home Work dealing with the lesson given d. Teacher asks students to read the next lesson at home.

### Research Results

Observations of student activity during the learning process by using macromedia flash can be seen in the following table:

**Table 2. Student Activities in the Learning Process Using Macromedia Flash**

Activity	MEETING									
	I		II		III		IV		V	
	%	category	%	category	%	category	%	category	%	category
1	53	high	63	high	68	high	89	very high	95	very high
2	32	low	37	Low	42	low	69	Very high	84	Very high
3	21	Very low	26	low	42	low	47	low	74	Very high
4	47	low	63	High	90	Very high	100	Very high	100	Very high
5	26	low	84	Very high	84	Very high	100	Very high	100	Very high
6	25	Very low	52	High	78	Very high	80	Very high	95	Very high

### Information

1. Students did not walked and bullying other children during class
2. Students pay attention, listen and follow instructions given on the teacher taught the material using Macro media flash media and answer questions put teachers.
3. Students ask questions that relate to the subject matter being studied are not yet understood
4. Students are ready to do the problems to the front of the class
5. Students work on exercises (BLM) granted in accordance with the material presented with macromedia flash
6. Students work on tasks given teacher's house completely.

Based on exposure data in Table 1, it is informed that at every meeting of positive student learning activities using Macromedia Flash is increasing. Students do not walk or do not bother other during the learning process, so they can achieve so many categories successfully. At this stage the students are more enthusiastic in learning through Macromedia Flash. In the fourth and fifth meetings, all students work on exercises students' worksheet then they do the exercise on the

board. When they do those exercises they tend to rise hand enthusiastically to get chance to do the work on the board. Most students also have been working on homework thoroughly.

From the observation, above it is demonstrated that using computers in learning mathematics can make students having more positive attitude toward himself as a mathematician and trying to solve the problem. Learning activities with the macromedia flash gives more opportunities for students to conduct exploration, observation. This is consistent with the essence of learning geometry

Analysis of achievement test results is shown in the following table:

**Table 3. Calculation Result Data Test Learning Outcomes**

Sample	N	$\bar{x}$	$x_{max}$	$x_{min}$	s	$s^2$
Experiment	21	64.71	90	50	12.24	149.71
Control	20	53.3	85	40	13.34	178.01

Based on the data of the table above, it can conclude that the average grades of student learning outcomes in experimental class are 64.71 (standard deviation 12.24). While the average grades in control class with is 53.3 (standard deviation 13.34). Besides that according to the result of hypothesis testing, t-test = 2.89, while obtained t-count = 39 Retrieved t-table = 1.645. Because t-count > t-table  $H_0$  is rejected and the research hypothesis ( $H_1$ ) is accepted.

Where:

$H_0$ : the outcomes of experimental class students learn the same as the control class

$H_1$ : the outcomes experimental class students learn better than the control class

Each student from experimental class and control class is received Student Worksheet (LKS), which consists of incomplete summary of the lesson, in this stage the student will complete it in person by the student through the findings and guidance of the teacher. When the teacher explains the lesson through using Macromedia Flash where it is useful to help students better understand the material, because of their own concept of such material is found. LKS also contains student exercises, where the practice was immediately discussed together. Such learning activities enhance students' understanding of the material provided. This resulted in better acquisition of material test results for congruency wake up flat. Furthermore, Sudjana (1990:3) also said that the process and learning outcomes of students showed a significant difference between teaching without using media and with the media. Therefore, the use of teaching media in teaching process is strongly recommended to enhance the quality of teaching.

### Conclusions and Suggestions

From this findings it can be conclude that: the results of learning mathematics especially geometry by using Macromedia Flash is better than without using Macromedia Flash at MTsN Sungayang class IX student of the school year 2010/2011. Student's Positive activities are also increased.

Herewith, the researcher would like to suggest the following things:

1. It is better to use macromedia flash in teaching geometry to students so that students involvement will increase and it will gives better result on learning outcomes.
2. It is expected that teachers can enhance creativity in the using computer-based instructional media, thus the purpose of learning mathematics (understanding concepts, reasoning, communication, problem solving and connections) can be reached

### References

- Abdullah Ad- Duweisy, Muhammad.2008. *Menjadi Guru Yang Sukses dan Berpengaruh*.Surabaya:La Raiba Bima Amanta (ELBA)
- Abdussakir, (2002). Pembelajaran geometri berdasar teori Van Hiele berbantuan komputer. Dalam *Prosiding Konferensi Nasional Matematika XI*, Juli, 2002.
- Arsyad, Azhar. 2004. *Media Pembelajaran*. Jakarta: PT. Raja Grafindo Persada.
- Dimiyati & Mudjiyono. (1990). *Belajar dan Pembelajaran*. Jakarta: Rineka Cipta

- Dimiyati & Mudjiyono. (2006). *Belajar dan Pembelajaran*. Jakarta: Rineka Cipta.
- Djamar, Syaiful Bahri. 2000. *Guru Dan Anak Didik Dalam Interaksi Edukatif*. Jakarta : Rineka Cipta.
- Pramono, Dian. 2004. *Berkreasi Animasi Macromedia Flash MX Professional 2004*. Yogyakarta: Andi Yogyakarta.
- Roestiyah. (1998). *Strategi Belajar Mengajar*. Jakarta : Rineka Cipta
- Sabandar, J. (2002). Pembelajaran geometri dengan menggunakan Cabri Geometry II Dalam *Prosiding Konferensi Nasional Matematika XI*, Juli, 2002.
- Sardiman A.M. (1996). *Interaksi dan Motivasi Belajar Mengajar*. Jakarta : Raja Grafindo Persada.
- Seels, BB dan Richey, R.C. 1994. *Teknologi Pembelajaran (terjemahan)*. Jakarta: Unit Percetakan Universitas Negeri Jakarta.
- Smaldino, S.E, dkk. Tanpa tahun. *Instructional Technology and Media For Learning*. Ohio: Pearson Merrill Prentice Hall.
- Sudjana, Nana. (1990). *Penilaian Hasil Proses Belajar Mengajar*. Bandung: PT. Remaja Rosdakarya.
- Tengku Zawawi Bin Tengku Zainal. *Komputer dalam Pendidikan Matematika*.  
<http://www.geocities.com/Athens/acropolis/2766/computer.htm>.