DEVELOPING MMI FOR ELEMENTARY SCHOOL STUDENTS BASED ON PMRI

Yetti Ariani[1], Yullys Helsa[1]
Elementary School Teachers Educational Programs, Padang State University[1]
1)arianiyetti@gmail.com, 1)elsa_khamek@yahoo.co.id[2]

Abstract

This research is an extension of previous research which is produced Interactive Learning CD on cube and beam course materials. It is done by developing a course model based on IT for Elementary School teachers by using Camtasia and Macromedia Flash Software for geometrical, such as: pyramid, cone, prism and sphere. In addition, teaching and learning about geometrical based on IT is one of methods to attract students and to increase the students' motivation. It is practically described by user friendly, self-facing and stands alone. The research approach is Research and Development which consists of analysis, design, and evaluation. Data collection is obtained by conducting document analysis and test. Currently, the prototype is MMI product and then it is validated by experts. In short, MMI research could be expanded later.

Keywords*: Interactive Multimedia, geometry, and Research and Development*

INTRODUCTION

In learning process, there is a need to have communication between teachers and students. To hinder or reduce the possibility of miscommunication should be used facility that can help communication process which is called media. A teacher can improve quality in delivering the lesson if he is supported by any kind of media. As a facility to communicate in teaching learning process, media cannot be put away. Moreover, economic study as a subject that consists of many concepts and theories that has to be mastered by students. To improve the learning desire, students need to be given chances to look for data from any sources so that they can learn better. By using any learning media, students are not only use listening ability to attained the lesson, but also become integrative in learning through variation of illustration and other senses. This is the importance of media in learning.

Besides numbers and measuring objects, geometry is one of the materials in mathematics that have been taught since primary school. Based on 2013 curriculum, students at the beginning are introduced about shape, such as square, rectangle, triangle, kite, and others. After this phase finished, students will get explanation about three dimensional figures. Those are figures formed plane shape or curve shape. Any kind of three dimensional figures that have been learnt in primary school are related to simple shapes, for instance cube, parallelogram, prism, cylinder, pyramid, and cone.

Three dimensional figures concepts hold an important part in knowledge and technological development, such as architecture knowledge, civil technique, and etc. However, students in primary school face difficulty in understanding geometry. One of the problems is primary school students are still in the phase of operational concrete. Generally, primary school teachers in teaching about space still in an abstract way and not really use multimedia as a help. Teaching learning process of space that can cope students' difficulties in learning individually besides using concrete materials is semi concrete materials, namely using multimedia technology of communication. Multimedia that can be used is Information and Technology (IT).

By utilizing any advantages of IT, it can improve students' ability in absorbing concepts, procedures, and mathematics algorithm. The existence and the improvement of IT in the global communication these days have given opportunities and enlargement of learning sources that can be happen anytime and anywhere without bounded by space and time. With the help of IT delivering process and presenting materials can be more interesting and fun. In another part, the existence of IT as a new technology gives challenge to teachers professionally to be able to manage information so that they can choose any media and utilize IT effectively and efficiently in the teaching and learning process. It is suitable with 2013 curriculum, namely utilizing IT as tools or media in helping students in understanding concepts.

Technology development has reinforced sources and learning media in any kinds of forms, for instance OHP transparency, Power Point Slide, figures, animations, film/ video, hypertext, web page, computer learning program, and software of applications which support the learning such as power point, macromedia flash, maple, etc. Professional teachers have to be able to choose, develop, and take use of any kind of learning media by utilizing the superiority of IT, so that they can be make teachers easier present materials, help students to understand the material, and the more important thing is not being left if it is compared with students' ability in using IT.

The IT improvement also makes able any kinds of media at the same time in the form of learning multimedia. The use of interactive multimedia which constitutes audio visual component (sound and display) to deliver learning material that can attract students' attention to learn more. Interactive multimedia can also give students opportunity to do quasi experiment and exploration thus it can give learning experience more than listening materials and teacher's explanation.

Based on observation result found by the researchers, it is assumed that for primary schools located in the city center only the ones that have full facility and infrastructure. Teachers' ability in using and creating media in IT basis in learning about three dimensional figures is still in the low category. Moreover, primary school teachers whose schools located in the urban area. This thing will be a challenge and duty for researchers to implement IT in learning about space in primary school. If it is left away, teachers' ability in using the technology tools will decrease, the tools that are available in those schools can perform as those should be. Students' motivation decrease, learning difficulties can be coped so it affects to the unsatisfying students' learning result as expected.

In order to help primary school teachers to be able to use IT tools in learning space, so that they not only teach but also help students to learn and motivated students to learn better, so that it can be done by using learning media in IT basis using camtasia and macromedia flash software.

Learning using media IT basis is one of the teacher's efforts to make learning three dimensional figures fun for students, so that students are motivated better. Meanwhile media that is used is macromedia flash can be animated. Using macromedia flash media, students are expected to learn space freely anytime and anywhere without boundaries. Students can learn using their own technology devises such as iPad and etc. And teachers become more professional in using technology devices beside their position as teachers.

METHOD

This present study is a developmental study using qualitative and quantitative descriptions data analysis technique. The development of learning media IT based is an activity to develop mathematics learning media focusing on three dimensional figures involving content and systematic, and delivering in interactive CD pact which use camtasia and macromedia flash as software, and to know the potential effect of it, there is a field test conducted. This present study use development research method. The development process includes analysis, design, and evaluation (Tessmer, 1993).

RESULTS AND DISCUSSION

Research was started by conducting observation in *Sabbihisma* PS and 20 State PS *Kurao Padang* informally to see computer laboratories and students' ability and teachers' ability towards computer. This activity is guided by headmaster in each school. From that result, researchers concluded that computers in *Sabbihisma* PS and 20 State PS *Korao Padang* can perform well and the students have computer literacy since they are commonly use computer at school and at home. There are three phases will conduct in this research, namely analysis, design, and evaluation.

Analysis Phase

There two kinds of analysis, namely:Analysis of Main Media Program (*GBPM*), analysis phase of curriculum materials, analysis phase of learning goals in two dimensional and three dimensional figures.

Designing flowchart

Flowchart is a programming flow that is made from the start; content, and exit the program, scenario is clearly drawn on flowchart. This phase consists of two phases.

Making storyboard

Before making storyboard, we did paper based phase. This phase consists of designing activity, starts from sketches of illustration on papers. This phase aims at getting information about shape and anything that would be put on the macromedia flash. This design constitutes main menu and additional menu. Main menu consists of materials, examples, simulation and evaluation while additional menu consists of music and animation. After designing in paper based form, it is continued to make storyboard. Storyboard is a description which constitutes explanation of visual and audio from each flow in flowchart. One column in storyboard represents one display in computer monitor. Thus, usually storyboard is thick.

Designing phase (computer-based)
In this phase ideas form storyboard place to computer. This activity is divided into two phases, namely:
Collecting any materials needed to complete MMI presentation. Those materials needed consist of video, sounds, animations, and figures.
Programming by stringing all materials needed in Prototyping Phase:

Prototype 1
Prototype 1 presented focuses on three main characteristics (content, structure and lay out). Content consists of chapters, subchapters, paragraph, and etc about cube and parallelogram.Structure makes sense and flows also built from chapter and subchapter above. Lay out consists of visual aspects such as illustrations, graphs, colors, and interactive, also granularity (icons) which is related to hyperlink and structured and used to divides text in chapter and sub chapter.

This phase is continuity from the previous phase. This phase aims at gaining product of learning CD. A good learning is based on content and form.
Through discussion with teachers, there were some suggestions like audio sound that have to be clearer, color that have to be light and letter that have to be bigger. All the suggestions were directly delivered and some of the written on the validation paper. When the learning conducted, it was observation towards students. Based on the observation result during the learning, can be concluded,

- All students have already understood how to operate computer, so that they could use it well.
- All students listened to the teacher explanation
- Some students took notes related to the learning materials.
- All students finished the task given
- Most students were on time in solving the task.
- Some students were not worried during the learning
- Most students paid attention to other students who represented their group discussion result.
- Most students showed their arguments in discussion

Some steps in developing interactive multimedia as follow:
Make Outline of Media Program (*GarisBesar Program Media-GBPM)* consists of identification of the program. Through the identification then considered the title, targets, goals, and main materials stated inInteractive Multimedia (*MMI*). The next step is making a flowchart. A flowchartis a program plot designed from start, content,to exit/quit, the scenario is clearly stated in flowchart. Making a s*toryboard.*A storyboard is a description consisting of the explanation in visual and audio from every plot in flowchart. One column in the storyboard represents one display in monitor. Collecting any sources needed to complete the MMI. The sources for instance videos, sounds, animation, and pictures. The next step is *programming*which is combiningall sources that suit with the demand in the last activity. *Finishing* is a testing and revision. After that, program packaging in the form of CD and given a *cover*and*label*.

CONCLUSION AND SUGGESTIONS

The development of media through IT in learning three dimensional objects utilizing *Software Camtasia*and*Macromedia Flash*can help teachers to be able to use IT and can motivate students in learning. Learning through IT can be developed in other mathematics material in Primary School because it is easy to be made as media and can be animated so that any people will be interested.

Based on research result and conclusion above, it is suggested that (1) teacher have to be good in handling learning media with IT basis, not only in classical learning but also in individual and group learning, also develop learning media with IT basis not only in cube and parallelogram material but also any kind of materials, (2) students have to be able to use learning media with IT basis in the classroom or at home, so that it can be improve students' achievement.

REFERENCES

Anderson, Ronal H. 1987. *PemilihandanPengembangan Media Pengajaran*. Bandung: PT GrafindoPersada.

Depdiknas. 2006. *Kurikulum Tingkat SatuanPendidikanStandarKompetensi SS dan MI*. Jakarta: Depdiknas.

Dwi, Astuti. 2006. *TeknikMembuatAnimasiProfesionalMenggunakan Macromedia Flash*. Yogyakarta: C.V. Andi Offset.

Hendri, dkk.2007. *PengembanganMateriKesebangunandenganPendekatan PMRI di SMP Negeri 5 TalangUbidalamJurnalPendidikanMatematikaVol I, No. 2*.Palembang : PPs PendidikanMatematikaUniversitasSriwijaya.

Madcoms.2007. *Makromedia Flash Pro 8: Mahirdalam 7 Hari.*Yogyakarta : C. V. Andi Offset.

Meriana, Erly. 2009*. ModulMerancang Multimedia Interaktif.*Bandung.P4TK BMTI.

Prianto, dkk. 2008. *Making Education Animation Using Flash*. Bandung: Informatika Bandung.

Tessmer, M. 1993. *Planning and Conducting Formative Evaluations*. London, Philadelphia: Kogan Page.

Wena, made. 2009. *StrategiPembelajaranInovasiKontemporer*. Jakarta: BumiAksara.