

CHAPTER I

INTRODUCTION

1.1. Background

At the level of senior high school (SHS), physics is often considered essential to be taught as a separate subject to several considerations. Learning physics conducted a scientific inquiry to cultivate the ability to think, work and scientific attitude and communicate as one aspect essential life skills of senior high school (SHS) (Depdiknas, 2006)

But then in reality, Physics learning become “scary” lesson because of difficulty in understanding the physics subject, then often encountered the students of senior high school complain about physics which are difficult to understand and require a lot of energy and time to understand it. They suggest better avoid physics rather than meet difficulties when learning physics. If they are forced to learn physics, most of them just follow to fulfill obligation in school, instead of trying to understand it.

Wiyanto (2009) related to the complaint that the study of physics is very difficult, he stated, that studying physics is difficult, because it was a sense of fondness and love for students to learn physics must be grown by avoiding a boring routine. Physics became the scourge of many pupils and students. Even teachers too much to avoid physics by reason of physics is difficult. Sebayang (2011) stated that physics is a subject which is quite difficult. Because of the difficulty of understanding physics that causes them to hate physics. This statement is supported Hardhienata (2007) which stated to become a working physicists require creative abilities, intellect, and perseverance. Physics is not easy because it involves mathematical techniques, sometimes even the integration of leading edge techniques and analysis advanced geometry, such as topology

Based on the observation and experiences of author when did Experience Training Program period (PPLT) in SMA N 1 Perbaungan in 2015, many students do not like physics because of the difficulty in understanding the concepts in

physics. Similarly, after questionnaire about learning physics of students at MAN 2 Model Medan, only a few students were able to understand the lessons taught by physics teacher, or get the perception about physics lessons as a difficult subject and lessons which only about formulas that turned more difficult for them.

The author was also having discussion with some physics teacher in MAN 2 Model Medan and the school where the author did experience training program (PPLT), the conclusion was that teachers often face difficulties when designing physics learning activities which contain abstract concepts. Thus, making the students have the difficulty to understand the materials. This is the reason of low score in physics, which has an average of 65, where the score should be more than the standard of completeness criteria (KKM) that is 80. For example, in learning concept of static and dynamic electricity, and heat and temperature, optical geometry, static and dynamic fluids, relativity theory, quantum physics, modern physics etc. where contain many abstractions. In such way that teachers need to use some tools that providing teacher to make easier for them in explaining the material in class.

In their professional development, teacher is demanded to have an amount of capability. One of them is creating the learning process become good for students, and make class condition actively and controlled well. Especially for choosing media, it must be suitable to the matter that have to share to students and suitable for using the infrastucture in school and as striving the global and hi-tech era. Because based on Slameto (2010) he proposed that learning tools or learning medias are closely related in the way of students study. Because of the media that used by teacher in learning and teaching process is used by student to achieve the material of study. Leaving from that case, is needed a media which can make easier in explaining abstract concepts in physics learning, thus clarifying the students in understanding that concept clearly. Furthermore, remembering the advance of technology in this second millennium. Not any longer be a difficulty to find learning media by computation-based. Because of the rapid development of science and technology in education have effect toward the quality of learning process. Beside it, the problem that faced in education world today is more

complex because education prosecuted to advance the performance in all sides. To get qualified and quality learning outcomes is necessary to make rehabilitation, changing, and modernity.

One of media (computer-based) is macromedia flash, it is a computer software that used to design animation. By learning process which used macromedia flash, students not only imagine but also can observe the concept that teacher explained directly. Macromedia flash is composite among kind of media that capable of creating learning condition become interesting and fun so that give motivation to learn higher in individual of student (Ariasdi, 2008). Applications like Macromedia Flash have become easy to use and many curriculum planners and teachers are now able to create animated aids using these tools. (Eilks et al. 2009)

Similarly according to Arsyad (2007) In the process of teaching and learning, the media have an important role. Because the media can be a bridge between the teacher's explanation to the students' understanding, when a matter cannot just be explained verbally. Complexity of the material that will be delivered to students can be simplified with the help of the media.

Some research result that had been done by other research by using same computer-based media that is macromedia flash can increase the learning outcomes. In a journal "The Effects of Varied Animation in Multimedia Learning: Is the extra effort worthy?" (Rias, 2011) stated that improved learning actually occurred and which version of the animation produced the better outcome. As same as "The Effect of Computer-Assisted Instruction on the Learning of Black Body, Compton and X-Rays" it stated that animations which were prepared with Macromedia Flash 8.0 Program. The result of the study shows that students taught by computer supported animations were performed better scores than those in traditional teaching group ($p < 0,05$) (Akcaay and Unal, 2011)

In a thesis with a title "Pengaruh Penggunaan Media Pembelajaran *Flash* terhadap Hasil Belajar Siswa pada Sub Bab Materi Larutan Elektrolit dan Non-Elektrolit (Antoniate, 2011) stated that the learning outcomes of students increased by 50%. In the thesis "Application of Cooperative Learning Model

STAD which is integrated with the Media computers Macromedia Flash on Topic acid-base and salt" "(Hand, 2011) stated that the learning outcomes of students increased by 46.60%. Additionally, the findings showed that students changed their perception of science and technology learning as a result of teaching and learning with integrated animations. Students felt greater interest in learning, and emphasized more the use of technology and experiments during lessons. (Y, 2009)

Based on the description above, thus, author would like to do a research about **“The Effect of Using Macromedia Flash with Direct Instruction (DI) Model to the Students’ Learning Outcomes of Heat and Temperature Subject in Grade X MAN 2 Model Medan Academic Year 2015/2016”**

1.2. Problem Identification

Based on that background, there are some problems that can be identified as follows:

1. Teacher difficult to explain physics material which load abstract concept without presence the visualization, especially for material heat and temperature so that cause of difficulty for student in understanding the material being taught.
2. Selection of media that is not suitable and less interesting can be difficult for teachers to convey material physics with abstraction and can bother the fair communication between teachers and students.
3. The lack of optimizing technology utilization by teacher in the class.
4. There is more student that unlike learning physics.
5. More students suggest physics as difficult lesson and complex matter and complicated to understand.
6. Lack of students’ interesting in physics learning because of teacher cannot interest in teaching process.
7. Lack of the teacher skills in explaining abstract concept in physics subject because the less of media.

8. Learning outcomes of students in grade X MAN 2 Model Medan in Physics is less than *KKM* (minimal completeness criteria).
9. The media that used by teacher less interesting for students.
10. More teachers confuse to choose suitable and effective media in physics learning.

1.3. Problem Limitation

Remember the imposingly scope of problem and by considering the constraints of time, funds, and the ability of researchers, this study is limited to a few things as follows :

1. This research is limited to the use of macromedia flash
2. This research is limited to the use direct instruction (DI) model.
3. This research is limited to the students' learning outcomes.
4. This research is limited to the heat and temperature subject.

1.4. Problem Formulation

Based on the background of problem, identify of problems, and circumscription of problem, hence the abbreviation of problem in this research are:

1. How are students' learning outcomes in physics learning by using macromedia flash with direct instruction learning model of heat and temperature subject in grade X MAN 2 Model Medan academic year 2015/2016?
2. How are students' learning outcomes in physics learning without using macromedia flash with direct instruction learning model of heat and temperature subject in grade X MAN 2 Model Medan academic year 2015/2016?
3. Is there effect of physics learning by using macromedia flash with direct instruction learning model to students' learning outcomes in heat and temperature material in grade X MAN 2 Model Medan academic year 2015/2016?

1.5. Research Objectives

Based on the previous problem formulation, so the following is some objectives of research:

1. To know the students' learning outcomes by using macromedia flash with Direct Instruction learning model to the students' learning outcomes of heat and temperature subject in grade X MAN 2 Model Medan academic year 2015/2016.
2. To know the students' learning outcomes without using macromedia flash with direct instruction learning model to the students' learning outcomes of heat and temperature subject in grade X MAN 2 Model Medan academic year 2015/2016.
3. To know the effect of using of macromedia flash with direct instruction learning model to the students' learning outcomes of heat and temperature subject in grade X MAN 2 Model Medan academic year 2015/2016.

1.6. Research Benefits

Benefits of research that hopefully can be reached are:

1. For teacher, Giving motivation to teacher to be more active in development media especially to upgrade quality and process of teaching and learning in class.
2. For school: there are two benefits, this research will give worth suggestion to any school or institution especially school where will be held this research to increase the quality of physics learning.
3. For student, this research will give motivation to them in understanding physics, or can change their perception about physics as uninteresting or annoyed and scary lesson, and about the difficulties by using attractive media such as macromedia flash.
4. For researcher, this research will increase knowledge, skills, ability and experience in completing the competence of teacher as teacher candidate.
5. For physics education study program and society, to be the comparison material to another researcher in next research.