

# CHAPTER I

## INTRODUCTION

### 1.1 Background

Permendiknas No. 23/2006 on Competency Standards for Graduates (SKL) for high schools states that chemistry is obtained and developed based on experiments to find answers to questions, what, why, and how natural phenomena especially those related to composition, structure and nature, transformation, dynamics and energetic of substances. Chemistry subjects in high school / MA learn everything about substances that include composition, structure and properties, changes in dynamics and energetic of substances that involve skills and reasoning. One of the subjects of chemistry at the high school level is to apply chemical concepts to solve problems and everyday life.

According to Adi W. Gunawan (Gunawan, 2007), in every learning there are always 3 important components that are interrelated to one another. The three components are: (1) Curriculum, material taught, (2) Process, how material is taught, (3) Products, results of the learning process. The interrelationship between the three components is what must involve the teacher and students must be able to understand each other and act actively with each other. This activity is on two parties. This means that students have the same opportunity to convey something to the teacher. to build students' knowledge and competencies actively in the teaching and learning process.

In the process of learning chemistry carried out by the teacher that is giving explanations of chemical material in a monotonous manner, the teacher tells students to only read books and not look for other sources as a comparison, and the teacher gives exercises questions from LKS or even textbooks provided by the teacher. With this way of learning, many students do not like

chemistry because it is less interesting and boring, so there are still many difficulties experienced by students in understanding chemical materials specifically in the nomenclature of compounds. In high school equivalent there are facilities provided by schools such as a complete computer laboratory. Computer laboratories can be used as learning media. Chemistry teachers

have never used computer laboratory facilities as a learning medium to trigger students to improve student learning outcomes.

Teachers play an important role in improving the quality of education. Currently the education system in Indonesia has undergone many changes. These changes can be seen from the development and improvement of curriculum and evaluation systems, improvement of educational facilities, development and procurement of teaching materials for teachers and other education personnel, so that with these changes it is expected to further improve the quality of education. One indicator of improving the quality of education is obtained from student learning outcomes. Student learning outcomes are determined by learning activities carried out by the teacher. Therefore the teacher's ability to manage the class is an important factor that determines the activeness of students in the classroom. In managing classroom teachers can apply appropriate strategies, methods, media and learning models.

To improve student learning outcomes teachers must choose the learning model and media used when teaching. One learning model that can be applied is Problem Based Learning (PBL). Besides that Khairina, (2018), conducted a study with the title Cooperative Effects-talking chips integrated video learning on student learning outcomes. In this study, it was shown that the cooperative model of the talking chips type provided opportunities for students to be active in the learning process. This study aims to investigate the effect of cooperative learning on talking chips type assisted by video learning to improve student learning outcomes on the subject of compound nomenclature. This class action research was carried out in class X TSM 2 SMKN 1 Teluk Kuantan. Data collection techniques using observation, tests and documentation. Data analysis using the calculation of the percentage of completeness of student learning outcomes. In addition, Syairibunddin and Ibnu Khaldu (2016) conducted a study entitled The Implementation of Problem Based Learning Models with Audio Visual Media on Chemistry Bonding Materials on Mastery of Concepts and Critical Thinking of Students in Panga 1 Public High School. In this study, the results showed that the application of PBL with audio visual media significantly influenced the mastery of the concept of students at SMA Negeri 1 Panga on chemical bonding material.

The average value of the experimental class is higher than the control class. The highest value of the concept mastery concept is the analysis indicator (C4). The application of PBL with audio visual media significantly influences the critical thinking ability of students of SMA Negeri 1 Panga. Evidenced by the average value of the experimental class (82) which is higher than the control class.

Muhiddin Palennari (2012) conducted a study entitled Potential Integration of Pbl. With Jigsaw Cooperative Learning In Improving Students' Metacognition Skills. In this study it was shown that the average corrected value in PBL + Jigsaw interactions was 19.61% higher compared to conventional learning strategies and students with high academic ability had 7.99% higher metacognition skills compared to students with lower academic ability.

Qurratun Khairina, Nofri Yuhelman, Jumriana Rahayuningsih, (2019) do research with the title Cooperative model type of talking chips provides an opportunity for students to be active in the learning process. The analysis showed that the classical completeness in the first cycle was 60% and the second cycle was 85%. Therefore, there is an increase in student learning outcomes from cycle I to cycle II by 25%. Based on the results of the study it was concluded that the Talking Chips-type cooperative learning model assisted with learning videos can improve student learning outcomes on compound nomenclature material.

Lia Pradilasari, Abdul Gani, Ibnu Khaldun,(2019) do research with the title Development of Audio Visual Based Learning Media on Colloidal Material to Increase the Motivation and Learning Outcomes of High School Students. Media validation test results from the validator produced an average value of 86.43% included in the category of very feasible. The average value of the media feasibility test questionnaire from the teacher (teacher response) that is equal to 94.28% is included in the very feasible category. The average value of the results of learning motivation questionnaire that is equal to 86.46% is included in the excellent category and the average value of the test results of learning outcomes is equal to 77.02% included in the high category. The conclusion of this study is that audio visual based learning media on colloidal material is very suitable for use in teaching and learning and can increase student motivation and learning outcomes.

Agustin Ayu Rizki Dianasari, Bambang Suratman, Ady Soejoto (2017) do research with the title Use of Audio-Visual Materials in Teaching and Learning of Classification of Living Things Among Secondary School Students IN Sabon Gari LGA of Kaduna State. Research findings indicate that soft skills are influenced by problem based-learning, audio-visual media and interenships.

Rizki Zakia, Ibnu Khaldun dan Rini Safitri (2016) do research with title The Effect od Problem Based Learning Through School Watching Against Activities and Student learning Outcomes On Acid and base materieal in middle school. Based on the result of the study obtained it can be concluded that learning by applying PBL through school watching can improve student learning outcomes in the experimental class from 31 to 77,while in the control class that is 29 to 79. The result of observing learning activities in experimental class student with PBL learning through school watching is 89% with very good category, whereas learning activities in control class student with conventional learning is 79% which is categorized well.

Then the journal “ The Implementation of Problem Based Learning Models Integrated with Animation Media in Improving Student Motivation and Learning Outcomes “ is known that from the results of research it can be concluded that problem-based learning with animation media is more effective than problem-based learning without problem based animation which is shown to gain results student learning taught by using problem based learning models integrated with animation media has an average of 0,81 and the gain of student learning outcoes taught using problem-based learning models without animation media has an average of 0,58 (Komisia,2011).

With the previous research, the researchers tried to combine the Problem Based Learning (PBL) model with audiovisual media. It is hoped that this research can improve the quality of learning, where students not only acquire the concept of knowledge in the form of memory, but the most important thing is that students can solve the problems that are around them. Therefore, the characteristics of this study are that they emphasize memorization and not many calculations, hence This research was conducted using the Problem Based

Learning (PBL) learning model supported by audiovisual media to be able to improve student learning outcomes and motivation.

Problem Based Learning (PBL), is one of the innovative learning models that can provide active learning conditions for students. PBL is a learning model that involves students in groups to solve a problem gradually so that they get knowledge related to the problem and have the skills to solve the problem. PBL uses real world problems as a context for students to learn about critical thinking and problem solving skills as well as gaining essential knowledge and concepts from these lessons.

The media is a supporting tool for various forms of education and for conveying information. An interesting teaching media can be the learning outcomes of students in participating in learning activities, as well as avoiding boredom in students. Audiovisual media is media that consists of the process of listening as well as vision because it is displayed on the screen. The advantage of audiovisual media when compared to other media is that it can bring the real world, present images and sound at the same time so that the learning process is more interesting, can be played back and saves in time, effort and cost because the material can be presented in a CD which is also easy to reproduce. (Arsyad, 2000).

From interviews with several students, information was obtained that problem based learning and audiovisual media were rarely used in chemistry learning in schools. Based on the description above, researchers intrigued to examine student learning outcomes and motivation in learning Nomenclature of compounds with Problem Based Learning models with audiovisual media in high school.

From the description above, the researcher intends to conduct research with the title: "**The Effect of Problem Based Learning (PBL) Model with Audiovisual Media To Student Learning Outcomes and Motivation at the Subject of Nomenclature Compound in Class X SMA**"

## 1.2 Identification of Problem

Based on the description above, the writer can describe various problems that arise in the learning process in understanding chemical bonding material. Therefore, it is necessary to identify related matters in the problem under study. Based on the description in the background of the problem, the authors identify the problem as follows:

1. Student are less active in the learning process so they rarely ask questions or submit their opinions.
2. Difficult material to understand if the learning process is done not using media.
3. The media in the teaching and learning process is still rarely used.
4. In general teachers still use the lecture model, whose learning is centred on the teachers and tends to be boring and monotonous.
5. Student learning outcomes are still low.

## 1.3 Scope of Problem

In order for this researcher to achieve his goals, the authors limit the problem to be studied. This aims to make the problem under study more focused. In this study the problem focused is:

1. The learning model used is Problem Based Learning (PBL) supported by audiovisual media.
2. The material provide is limited to the subject matter of the Nomenclature of compounds.
3. The media used is audiovisual media
4. The research was conducted in class X
5. This research was conducted at SMA Negeri 5 Pematangsiantar

#### **1.4 Formulation of The Problem**

In accordance with the above problem formulation, the research carried out aims to:

1. How does the effect of the application of problem based learning models with audiovisual media on learning?
2. How does the effect of the application of problem based learning models with audiovisual media on student learning motivation?
3. How is correlation between student learning outcomes with student learning outcomes with student motivation using problem based learning models with audiovisual media?

#### **1.5 Research Purpose**

1. Knowing the effect of applying the problem based learning model with audiovisual media on learning outcomes.
2. Knowing the effect of applying the problem based learning model with audiovisual media on student motivation.
3. Knowing the correlation between student learning outcomes with student motivation using the model of problem based learning with audiovisual media.

#### **1.6 Benefits Research**

The expected benefits of holding this research are:

1. Aims input and consideration in the use of learning models and media in learning chemistry.
2. As a reference material for other researchers who have topics relevant to this study.
3. To increase the knowledge and insight of researchers in the use of model and media in learning chemistry.
4. To complete the thesis a final project in obtaining an educational degree.