CHAPTER I
INTRODUCTION

1.1 Background

Education is a process of activities carried out to hone intelligence, develop potential, improve personality, and form superior human resources. Education in Indonesia is regulated by Law no. 20 of 2003 concerning the Indonesian Education System which aims to develop the potential of students who are devout, intellectual, and behave politely. Educational programs need a curriculum as a learning plan that contains content and subject matter.

The current curriculum in Indonesia is the 2013 Curriculum with student assessments measured by knowledge, skills, and character strengthening. Strengthening the character in question is to increase faith and devotion to God Almighty in students (Oktavianti et al, 2020). Students are expected to be able to show an active, critical attitude, not give up easily, and be able to increase their ability to adapt to the changes in this technological era.

In modernizing education, good teaching can create superior regeneration. Regulation No. 19 of 2005 concerning Indonesian National Education Standards that the learning process carried out in an interactive, inspirational, challenging, fun way can motivate students to be more active (Simbolon et al, 2017).

Among students, chemistry is one of the less desirable subjects, because it contains chemical concepts and reactions that are considered abstract (Ristiyani et al., 2016). Other facts show that the teaching and learning process of chemistry is still monotonous with the lecture method so that students are less motivated and tend to be passive (Munandar, 2016).

Based on the researcher's experience during internship 3 at SMA Negeri 2 Medan, several problems occurred during the teaching and learning process, namely the lack of interest of students in chemistry lessons, learning chemistry with the method of memorizing and distance learning resulted in the lower understanding of students towards the concept of learning chemistry. Besides, the class showed that teacher-centered learning with the lecture method, the use of monotonous learning media using books and power points, moreover changing

the learning system to distance learning made students even more confused with the content of the material.

One of the topics in chemistry that is interesting to discuss is Chemical Bonds. Chemical bonding is one of the fields of chemical studies which contains many concepts and theories, so a good understanding of concepts is needed for students so that they can master these lessons easily.

Research conducted by Sabrina, (2018: 54) shows that 80% of students of class X SMA Samalanga Bireuen have difficulty solving problems distinguishing between covalent and metal physical properties, 76% of students have difficulty solving the problem of estimating molecular polarity, 37% of students have difficulty solving the problem that distinguishes between ionic bonds, covalent bonds, covalent coordination bonds, and metal chains. Similar to research by Mezia, et al, 2016, the results of interviews with chemistry teachers at SMA Negeri 1 Siantan Mempawah Regency showed that when students were given slightly modified questions, students tended to have difficulty solving them. This is because students often use learning methods by memorizing the material instead of understanding the concept of the material. From these problems, it takes an initiative to plan, prepare, and make learning media to attract the attention of students to be more active.

Learning media is a means of developing a learning system and supporting the teaching and learning process. Learning media that can convey the content of learning materials containing images, audio, and can explain an abstract lesson to be real is animation media. The advantages of learning media in the form of animation can attract the attention of students, increase concentration, can be accessed anywhere and anytime, and make it easier for students to learn independently.

The development of learning media in the form of existing animation media by adding or subtracting subject matter with the provisions (1) the animation media that is arranged must be able to improve the quality of the learning process in class, both from mastery of concepts, skills and motivation for students, (2) competent, practical, and effective and (3) the material presented in animation media must meet the demands of the curriculum (Rohanawati *et al*,

2014). Where the learning media that will be developed by researchers is animation media using Adobe Flash which will present interesting, creative, challenging, and fun learning for students.

Adobe Flash is a software developed by Adobe and is software that can be used as a learning medium. Adobe Flash has the advantage that it can create animation through objects with scripting features and expression support to produce more dynamic animations. Besides that, Adobe Flash is a video composition application that can add effects visually to video sources so that you can create a new video with the addition of new visual effects.

Based on the research of Siregar, Untung, and Gafari, (2019), the result shows that the effectiveness of student learning outcomes tests got an average score of 81% with the criteria of "good", before using Adobe Flash CS5 learning media on learning to write explanatory texts got an average score of 68.7% with the criteria of "enough". Based on Saselah's research, Amir and Qadar (2017), shows that Adobe Flash-based multimedia can be operated on Android-based computers and cellphones. Student responses to interactive multimedia. The topic chemical equilibrium used is positive 97.8% and it can be concluded that multimedia meet the requirements to be applied in learning equilibrium chemistry at SMK and have a positive response from students.

With the results of this study, the authors want to develop learning media in the form of multimedia as learning media on chemical bonding material at SMA Negeri 16 Medan. For this reason, the authors are interested in researching with the title **"The Development Of Animation-Based Learning Media Using Adobe Flash on Chemical Bonding Material To Improve Student Learning Outcomes".**

1.2 Problem Identification

Based on the above problems, the problems identified are as follows:

1. Students have difficulty understanding the Chemical Bonding material.
2. Student learning outcomes on chemical bonding material are low.
3. In the learning process, the teacher often uses the same method so that student learning motivation is reduced.

1.3 Research Scope

Some of the limitations of this study are:

1. This research only develops chemistry learning media based on video animation which contains a discussion of chemical bonding material for class X SMA with the following sub-topics: 1) ionic bonds, 2) covalent bonds, and covalent coordination
2. Animation-based learning media using Adobe Flash is limited only to determine student learning outcomes.
3. Trial of animation-based chemistry learning media using Adobe Flash is limited to 1 class in SMA Negeri 16 Medan.

1.4 Problem Formulation

Based on the background of the problems that have been stated above, problems can be identified as follows:

1. How is the feasibility of developing an animation-based learning media using Adobe Flash on chemical bonding?
2. How are the students respond to animation-based learning media using Adobe Flash on chemical bonding material?
3. How is the students' learning outcomes after being taught using learning media using Adobe Flash on chemical bonding material?

1.5 Research Objectives

Based on the formulation of the problem, the objectives of this research are:

1. To determine the feasibility of the development results of learning media based on animation using Adobe Flash on chemical bonding material.
2. To determine students' responses to animation-based learning media using Adobe Flash on chemical bonding material.
3. To determine students' learning outcomes after being taught using animation-based learning media using Adobe Flash on chemical bonding material.

1.6 Research Benefit

The benefits of this research are as follows:

1. For teachers, the existence of this animation media is expected to help teachers in teaching abstract chemical bonding material.
2. For students, the existence of this animation media can help students understand abstract concepts in chemical bonding material and can provide an overview in the form of text data, video, animation, audio.
3. For schools, the existence of animation media is expected to be a source of learning and information in studying chemistry in schools.\
4. For researchers, as a source of research material for researchers, especially in research on learning media, especially animation development.

1.7 Operational Benefits

Some of the operations in development research are:

1. Media Development

   Media Development is the process of developing tools/media that are validated as educational products that are used to convey messages for students' thoughts, feelings, and willingness to learn.
2. Animation Media

   Learning animation media is a media that contains a collection of images that move with audio so that it is memorable to live and can convey learning messages.
3. Adobe Flash

   Adobe Flash is computer software that is a flagship product of Adobe Systems that is is used to create vector images and animation of these images.
4. Media Feasibility

   Media feasibility is the suitability of the media with the format, quality, and conformity of the concept so that it can be used as a learning media.

5. Learning outcomes

   Learning outcomes are achievements achieved by students in the process of teaching and cognitive ability in the topic of chemical bonds to be measured at the beginning and end of learning.

6. Student's Response

   Student responses are student responses, reactions, or answers to learning media that have been developed after being taught with animation-based learning media using Adobe Flash.