

CHAPTER I

INTRODUCTION

1.1 Background of the Problem

Education has an essential role in building the nation and state by creating the nation's successors who have noble skills, knowledge, and virtuous character. Education in Indonesian is always interesting to discuss, such as education systems, curriculum, facilities, and teacher competencies.

According to Bukhari Umar, the understanding of education is a system that involves several components, including educational goals, teachers, students, environmental tools or institutions, curriculum, and evaluation (Bukhari Umar, 2018 P.51). These components will work together in achieving goals previously planned. The goal will not be achieved well if there are harmful components that make a limp system (Asrial et al, 2019 p.2098). In Law No. 20 of 2013 Article 1, it is explained that the definition of education is a conscious and planned effort to create an atmosphere and learning process so that students can actively develop the potential themselves to have several abilities such as spiritual, religious, self-control, personality, personality, personality, personality Intelligence, noble character and skills needed by themselves, society, nation, and state (Aji, 2019 P.16).

From the understanding of education above, it can be concluded that education is a conscious effort planned involving several components that aim to make students have abilities such as spiritual, religious, self-control, personality, intelligence, noble morals, and skills needed by themselves, society, nation, and state.

The purpose of education, according to Socrates, is to develop the student's thinking power so that students can understand the main points of decency (Bukhari Umar, 2018 p.133). The educational purpose in a hierarchy is likened to the stairs that are structured from the bottom to the top. To achieve the next goal, we must first accomplish the goal below. If the objectives below have not been achieved, then a higher purpose that can be presented will not be achieved. For example, to achieve

the goals of national education, it must start by achieving learning objectives or indicators, then essential competencies, then competency standards, institutional goals, national education goals, and finally, national life goals. If indicators at the elementary level are not achieved, then basic competencies will not be achieved, and so on. (Sulaiman , 2015 p. 10).

However, the facts found in schools turned out to be the teacher still using conventional teaching methods, namely learning that was centered on the teacher even though at school had implemented a 2013 curriculum that demanded student-centered learning, with the reason to reach the curriculum target because the time of learning in the classroom was insufficient because it is used for school activities. As a result of this, the student tends to be passive and only listens to the teacher's explanation because the teacher, on average, chooses the lecture method that is considered practical and unnecessary to prepare learning tools according to student needs. Whereas in the 2013 curriculum, students are required to be active, creative, independent, and responsible so that they become capable and skilled, and the teacher's role in learning activities is as a facilitator of students who guides and direct, and facilitates learning activities that take place. This is what triggers student learning outcomes that are not optimal, so solutions are needed to overcome these problems.

So to support the achievement of learning objectives, learning media is needed to increase student enthusiasm for learning. Learning media is a set of learning tools that contain learning materials, methods, boundaries, and evaluation methods that are designed systematically and attractively that can be used to convey messages, information, or knowledge in the teaching and learning process carried out by the teacher and students so stimulates the attention and interest of students in learning the lesson. The learning media has an essential role because it can facilitate the learning process, such as making a more exciting learning atmosphere so that students' enthusiasm for learning increases.

The role of technology in education can support the learning process, which using this technology can be developed as interactive learning media, which impacts the learning process more effectively and efficiently. In the education sector, information and communication technology (ICT) has a significant role, especially at

the level of primary and secondary education. Information and Communication Technology (ICT) can be used as a medium of communication, a tool, or as a learning motivation generator for students. One of the signs of learning changes in the industrial era 4.0 today is everything automatic and digital, which is able to cause everyone, especially teachers, to have additional ideas to compete and have independent learning in accordance with the interests of each learner (Nikat & Sumanik, 2021 p.274). This digital technology is a necessity in today's education world because the Ministry of Education and Culture of the Republic of Indonesia (Kemendikbud) has made adaptations to develop a new curriculum and online system and develop education towards a more creative Indonesia in 2045. Adaptation is carried out to achieve conformity of concepts with capacities. Of students and the competence of educators and education staff (Hidayat et al, 2020 p.2).

One of the learning media that is often used is computer based learning media with the help of programs/software. At this time computer software is developing more rapidly, the world of education has also used computer software in making various interactive learning media with multimedia concepts. So it is important for teachers in mastering technology and applying the software in teaching activities to attract students' attention.

Chemistry is one of the many subjects taught in high school. The purpose of learning chemistry is to create students who master chemical concepts and apply them in an effort to solve problems in daily life and science and technology. In an effort to apply chemistry in daily life, of course, it starts with understanding concepts, principles, law, and the correct chemical theory by students. Meanwhile, the purpose of learning chemistry is to obtain understanding of various facts, has the ability to recognize and solve problems in chemical concepts, have skills in using chemical laboratories, and have a scientific attitude in everyday life .

Chemistry itself is the study of the structure, arrangement, characteristics and the change of a material, as well as energy that accompanies changes in the material. Chemical concepts are multilevel concepts, the meaning of multilevel concepts is to develop from simple concepts to more complex concepts. In understanding a chemical concept needs to be sequential, namely from simple concepts to complex concepts (Marthafera et al, 2017 p. 1).

The difficulty in learning chemistry related to the characteristics of chemistry itself. According to Kean, the characteristics of chemistry is include most of the chemistry concepts is abstract. According to Arifin, the difficulty of studying chemistry can be sourced in difficulties in understanding the concept of chemistry. The Facts show that current learning chemistry lessons is still felt difficult, it is because the learning tools used are not yet clear describing the concepts of chemistry (Khaeruman et al, 2015 p.268).

One of the chemical materials that is taught in High School is the reaction rate. But the reaction rate material is one of the materials from chemical lessons that is quite difficult because the material is abstract. Based on the results of interviews with class XI IPA students at MAN 1 Medan, it was found that one of the chemical materials that was not understood by students was the material of the reaction rate. The difficulty of learning chemistry, especially the reaction rate material, lies in the gap between understanding the concept and the application of the concept but also because the reaction rate is abstract, giving rise to different assumptions for students to learn and develop (Pratama & Mulyani, 2015 p.180).

Therefore learning media is needed to help students understand the concept of reaction rates. So, an interesting and innovative learning media such as electronic modules is one of the solutions that need to be developed in order to become student material to overcome the problem. The E-Module will clarify and facilitate the presentation of material so that it is not too verbal so that it will be easier for students to understand. It will increase students' learning motivation to study the reaction rate material, then develop the ability to interact directly with learning resources that allow students to learn independently according to their interests and abilities and enable students to evaluate their own learning outcomes (Arsyika,2021, p. 23).

However, based on the results of pre-research and interview observations that the researcher had done before with a chemistry teacher, Mrs. Anitya Santri R Harahap, S.Pd, and class XI IPA students at MAN 1 Medan, it was found that the teacher only used the teaching material in the form of a printed book in teaching activities in the pace material reaction and have not tried innovation using media in the form of software or other interactive media so that teaching and learning activities are engaging, creative, innovative and motivative. As a result of the

absence of the development of exciting and innovative learning media resulted in a lack of student motivation to learn chemistry. Learning outcomes are a number of experiences gained by students covering the cognitive, affective, and psychomotor domains (Rusman, 2017, p. 129). According to Dimiyati and Mudjiono, learning outcomes are the peak of the learning process, which is influenced by the techniques of receiving, active, preprocessing, processing, storing, and calling for message generation and experience (Dimiyati and Mudjiono, 2013 p.35).

Then, researchers intend to develop teaching materials in which there are various fallibility or elements possessed by electronic modules using 3D Page Flip Profesional software. According to the official, 3D PageFlip Profesional is a software application that is used to create e-books, e-modules, digital magazines, e-papers, etc. 3D Page Flip Profesional is a kind of professional page flip software to convert PDF files to page flip publications. Each digital page of the resulting PDF can be flipped (back and forth) like an actual book that can be flipped. With 3D PageFlip Profesional software, we can add video, images, audio, hyperlinks, and multimedia objects. The use of 3D Pageflip Profesional software is straightforward for anyone to create realistic 3D Flash turning book pages without the need for programming skills. We just need to do the following three steps, namely importing PDF/images / FLV, adjusting styles, and publishing. We can convert PDF to Flash publications digital-based (Rozi, 2018).

3D Page Flip Profesional is the development of an electronic book model that is used as teaching material whose pages can be flipped back and forth by dragging like our fingers flipping a book page along with the dragging process. Take advantage of the page shift effect, which is expected to support the interest and motivation of students to learn (Sermadi, 2016, p.2).

3D page flip profesional is a type of professional page flip software that is used to develop or convert PDF files to digital publication pages. Each page produced can be flipped/flipped over like a book used by students in general. With the 3D Pageflip Profesional software, you can add images, audio, video, simulations, and other multimedia objects that will add an explanation of the content of the material (Amelia et al.,2021, p.73). This media will be feasible to make guidelines for teaching materials in the form of modules, and later, the electronic

module is expected to be a tool that attracts the attention of students and can help the process of daily teaching and learning activities.

From the statement above, we can take the conclusion that students need learning media in the teaching and learning process that are interactive, innovative, and creative so that the process of teaching and learning activities on the material reaction rate is more interesting and not monotonous so that the achievement of the learning objectives of the reaction rate, therefore the researcher wants to raise The title of "**Development of Electronic Module Using 3D Pageflip Professional on Reaction Rate Material**".

1.2 Identification of Problems

Based on the description of the background above, the problems can be identified, namely:

1. The limitations of the teaching materials that students get in learning chemistry on the reaction rate material.
2. Teachers do not develop creative and innovative teaching materials in chemical learning of reaction rate materials.
3. Teaching materials in the form of digital modules have never been used by MAN 1 Medan teachers in teaching reaction rate material.

1.3 Scope of Research

In this study, researchers will develop learning media on the Reaction Rate material in the form of an e-module which will be designed using 3D Pageflip Professional software, and then the module will be validated by several experts in the field of media and chemistry. Product trials were produced in a limited group to determine students' responses and increase student outcomes.

1.4 Formulation of The Problems

Based on the limitations of the problems that have been stated, the formulation of the problem in this study are:

1. How is the feasibility of the e-module learning media product based on 3D Page Flip Professional?
2. What is the response of the students of class XI IPA MAN 1 Medan about the e-module learning media for the reaction rate material based on 3D Page Flip Professional?
3. Is the application of e-module can improve student learning outcomes on the reaction rate material?

1.5 Problems Limitation

Based on the identification of the problems that have been stated above, the researchers limit the problems as the focus of research, as follows:

1. Development of teaching materials in the form of digital modules using 3D Page Flip Professional software.
2. The developed digital module teaching materials focus on the Reaction Rate material.
3. Researchers conducted research at MAN 1 Medan in class XI IPA 1.

1.6 Research Objectives

Based on the formulation of the problem that has been stated, the research objectives in this study are:

1. Develop 3D Page Flip Professional based learning media on the subject of chemical reaction rate material.
2. Knowing the feasibility of 3D Page Flip Professional based learning media in the chemical subject of reaction rate material.
3. To improve student learning outcomes on the reaction rate material.
4. Knowing the response of students about learning media based on 3D Page Flip Professional on the subject of chemical reaction rate material.

1.7 The Benefits of Research

Based on the research conducted, the researcher hopes that it can provide benefits to several parties, as follows:

1. Theoretical:

The study's results support the previous theory that learning media can clarify the presentation of messages so that they are not too verbalized, overcome the limitations of space, time, and senses, and overcome the passive nature of students in the learning process. Thus students' ability to absorb knowledge will be more effective and efficient.

2. For Students:

As a media to support student learning that students can use without the limitations of space and time. So that it allows students to learn independently according to their abilities and interests at home well.

3. For educators:

The results of media development will serve as one of the suggestions or input for teachers to apply teaching materials in the form of digital modules to create an innovative, creative, and interesting learning atmosphere.

4. For Schools:

The results of this study are expected to be one of the inputs for implementing more effective and interesting learning so as to achieve a competitive advantage and increase the quality of the learning process.

5. For other researchers:

The results of this study are expected to be one of the relevant references for further research and can provide knowledge about the theoretical basis and empirical experience regarding the application of digital modules.

1.8 Operational Definitions

To make it easier to understand the words in this thesis, the writer gives important definitions:

1. Electronic module is one of the teaching materials that contain methods, systematically arranged material which is presented in an electronic format which includes animation, audio, navigation that makes users more interactive with programs to assist students in mastering the objectives of learning.

2. 3D Page Flip Professional is a software that can be used to create teaching materials in the form of e-books or digital e-modules with 3D effects, namely tools that have length, width, and height and can also be observed from any point of view. 3D PageFlip Professional can add animation, video, images, audio, hyperlinks, and multimedia objects.

3. The Borg & Gall model is one type of research and development method. The Borg and Gall development model has 10 implementation steps: (1) research and information collecting, (2) planning, (3) develop preliminary form of product, (4) preliminary field testing, (5) main product revision, (6) main field testing, (7) operational product revision, (8) operational field testing, (9) final product revision, and (10) dissemination and implementation.

