# CHAPTER I

# INTRODUCTION

## 1.1    Background

Since the beginning of 2020 with the Corona virus (COVID-19) outbreak, the implementation of activities in the home is highly recommended, which is expected to reduce the number of exposure to Covid-19 infection. This government enforcement is known as PSBB (large-scale social restrictions). Social and physical distancing measures aim to slow the spread of disease by stopping chains of transmission of COVID-19 and preventing new ones from appearing. These measures secure physical distance between people (of at least one metre), and reduce contact with contaminated surfaces, while encouraging and sustaining virtual social connection within families and communities (Sheng, 2020).

This has a huge impact on the daily activities carried out by humans. One of them is teaching and learning activities. COVID-19 is the greatest challenge that these expanded national education systems have ever faced. Many governments have ordered institutions to cease face-to-face instruction for most of their students, requiring them to switch, almost overnight, to online teaching and virtual education (Daniel, 2020). The President stated "With this condition, it is time for us to work from home, learn from home, worship at home," said President Jokowi when delivering his statement. Press at the Bogor Presidential Palace, West Java Province and with President Jokowi's direction, Monday (16/3/2020), the Minister of Education and Culture coordinates learning through an online system or online by getting free assistance from Ruangguru, Zenius, Google, Microsoft, Quipper, Your School and Smart Class. President Jokowi believes that the online system will reduce the mobility of students and reduce the spread of Covid-19 (Muqorobin & Rozaq Rais, 2020).

In the digital era, the existence of technology is one of human needs, almost all human activities require technological assistance. Technology makes it easier for humans to do work or other activities. With government directions suggesting to carry out the online teaching and learning process, technology is needed so that

the teaching and learning process continue to run well. Technology has produced many platforms specifically for online learning media such as ZOOM, Google Meeting, Webex, Ruang Guru, Google Classroom, Youtube and WhatsApp social media.

In this case, technology will create an atmosphere like being in a classroom, but actually being in a different location. Educators must be able to face the challenges of this era by utilizing technology as a means to keep the teaching and learning process running. Many applications can be used to design a learning media. Learning media has a very important role in creating a more enjoyable learning atmosphere so as to foster student motivation in learning which will affect student achievement. Media is one of the supports in the learning process. The success or failure of the learning process is largely determined by the media used. Media is anything that can be used to transmit messages from sender to receiver so that it can stimulate students' thoughts, feelings, attention and interests in such a way that the learning process occurs (Herliandry et al., 2020). The applications used to design learning media namely Construct 2, Moodle, Adobe Flash, Articulate Storyline, Kodular etc.

Construct 2 is an application that can design learning media in an interesting way. This application was originally used as a game maker application, but in terms of the features provided this application is also effective in designing learning media. According to the writings of Mokhammad Ridoi, Construct 2 is an HTML5-based game creation tool specifically for the 2D platform developed by Scirra. Construct 2 does not use a special programming language, because all commands used in the game are arranged in the EvenSheet which consists of Events and Actions (Mokhammad, 2018). In a thesis article by Anggraini (2017), Learning using Construct 2-based media gives the impression of an interesting and different learning from the usual learning process so that it has a positive impact on student learning achievement (Anggraini, 2017) and also in Rahman (2018) thesis which develops multi-platform-based learning media on probability material in high school. The results of the study prove that the media has been successfully developed with Construct 2 software which is suitable for use as a learning aid. The application is not complicated to use because it does not use a programming

language, so it can be concluded that besides being easy to use this application is very effective in making good and effective learning media. With the high use of smartphones, especially among students, this learning media is very effective to use. Some of the advantages obtained are that it can be used anytime and anywhere. This learning media can be accessed on an android mobile that supports this application and can be operated. Written in the book by Marko Gargenta, android is a comprehensive open source platform designed for mobile devices. Android is revolutionizing the mobile space. It is a truly open platform that separates the hardware from the software that runs on it. This allows for a much larger number of devices to run the same applications and creates a much richer ecosystem for developers and consumers (Gargenta, 2011).

Growing student's interest and motivation in learning is very difficult, plus in the midst of the COVID-19 pandemic, it adds to its own difficulties for students, because learning is online. The role of the teacher cannot be replaced by any sophisticated learning media. This causes students' interest and learning achievement to decline and the school learning curriculum system can't be achieved. By using this online learning system, sometimes various problems faced by students and teachers arise, such as subject matter that has not been completed by the teacher and then they replace it with other tasks. This creates a complaint for students because the tasks given by the teacher are more. Another problem with this online learning system is that access to information is constrained by signals that cause slow access to information. Students are sometimes left behind some informations. As a result, they are late in returning the assignments given by the teachers and also teachers who will receive and asses many assignments given by the students, making gadget storage space even more limited (Siahaan, 2020).

Chemistry is a field of study that combines theoretical concepts and mathematical concepts. Chemistry is a material that is considered difficult by students. Generally, students first have the wrong mindset about chemistry so they think that chemistry is a difficult material even though they have not studied it (Harefa et al., 2020). One of the materials in chemistry is the rate of reaction. The reaction rate is one of several materials in high school chemistry learning that is discussed in class XI with one of the basic competencies that must be achieved in

the 2013 curriculum in KI and KD 3 and 4, namely KD 3.6 explaining the factors that affect reaction rates using theory collision and 4.7 design, conduct, and conclude and present experimental results of factors that affect the rate of reaction (Ishma & Novita, 2021). In Herawati's writings, 2013, quoted in a thesis written by Ningtias, learning abstract concepts such as reaction rate requires the ability to be able to relate the three pillars of chemistry studies, namely macroscopic (which is real), submicroscopic (real nature which can be used to explain the movement of electrons, molecules, and atoms) and symbolic (consisting of various types of image and algebraic representations) to make learning more meaningful (Ishma & Novita, 2021). Without understanding these three pillars, Reaction rate material will be difficult to study so that misconceptions will arise. This problem also occurs in students at Sultan Iskandar Muda High School, the school that will be planned to conduct research. By conducting an interview with a chemistry teacher, he said that students experience boredom and low interest in learning so that it causes student achievement to decline and also media used was only limited, such as using Zoom virtual meetings, Edmodo, Video, virtual teaching with Notes and had never used Android-based media such as applications when carrying out the learning process. So through the explanation above, researchers want to develop effective and interesting learning media so as to create a good learning atmosphere. Thus the title of the research is **"The Development of Android based Learning Media by Construct 2 Software in Reaction Rate Material".**

### 1.2 Problem Identification

Based on the background described above, the problems identified as follow:

1. During the Covid-19 pandemic, face-to-face learning as usual was hampered because schools were closed and learning was conducted online.
2. Online learning activities are considered to cause boredom for students.
3. Learning the reaction rate is considered not to be delivered effectively so that the concept of this material is sometimes not well understood in its depth.
4. The need for learning media in the learning process.

5. The development of interesting learning media is needed so that learning can be carried out in an interesting and educative way.

## 1.3 Problem Limitation

Through the background exposure and identification of the problem, the problem limitation covered by the researcher is only regarding in the development of Android-based learning media with the Construct 2 application on the reaction rate material.

## 1.4 Problem Statement

Problem statement can be formulated as:

1. How is the results of the needs analysis based on the syllabus and teacher interviews regarding the existence of learning media?
2. How is the feasibility of android-based learning media with Construct 2 on the Reaction Rate material?
3. Is student learning achievement using android-based learning media higher than the KKM score?

## 1.5 Research Objectives

In general, this study aims to:

1. To analyze the student needs analysis based on the syllabus and teacher interviews regarding the existence of learning media
2. To determine the validity of android-based media using construct 2 software on the reaction rate material
3. To find out whether student learning achievement using android-based learning media is higher than the KKM.

In particular, this study aims to contribute in the form of interesting and educative learning media in the form of applications that can be accessed by students.

**1.6     Research Benefit**

This research is useful in various circles, namely schools, educators, and students:

1. School

   Research by developing learning media based on the Construct 2 application can be used as a reference for schools, especially improving the quality of reaction rate learning in schools. This is because the learning media with the Construct 2 application can be made according to the learning needs and the completeness of the school facilities.

2. Educator

   This application invites educators to try to develop learning media so that classroom learning becomes more attractive and effective. This application also makes it easier for the teachers to explain the material to the students.

3. Learners

   With the designed application, students are increasingly motivated and interested in learning the rate of reaction so that they can improve students' achievements.

**1.7     Operational Definition**

1. Learning Media

   Linguistically, the term media comes from the Latin, namely medius which means intermediary. Learning media are all forms of objects and tools used to support the learning process (Batubara, 2020).

2. Android

   Android is a comprehensive open source platform designed for mobile devices. Android is revolutionizing the mobile space. It is a truly open platform that separates the hardware from the software that runs on it. (Gargenta, 2011).

3. Construct 2

   Construct 2 is software that is usually used for making games. Construct 2 is an HTML5-based on game creation tool specifically for the 2D platform developed by Scirra. (Mokhammad, 2018).