

CHAPTER I INTRODUCTION

1.1 Background

Education is a human formation process that allows for grow and develop in accordance with the potential and ability that exist on it. Thus the role of a teacher is needed to develop the potential and ability of each student.

The world of education do not be separated from the learning process that includes teachers, students and learning environments that affect each other in the achievement of learning objectives.

The purpose of the learning process includes various aspects defined as the outcome of the learning itself one of which is the cognitive aspect. The cognitive aspect is students' intellectual ability in thinking, knowing and solving a problem. According to (Bloom, 1956) cognitive aspect has a purpose domain consisting of six parts of knowledge (*knowledge*), understanding (*understanding*), application (*application*), analysis (*analysis*), synthesis (*synthesis*), and evaluation (*evaluation*).

Chemistry is one of the natural sciences (IPA) that plays an important role and a significant influence on the development and technological progress. But on the other side of chemistry can also be categorized into a science that is rich in abstract concepts, the nature of this abstraction is the cause of student difficulties in enjoying to further understand the chemistry (Zainuddin, 2004).

The objective of chemical subjects based on the standard content of chemistry subjects SMA / MA (Permendiknas RI Number 22, 2006) is that students have the ability to understand the concepts, principles, laws, and theories of chemistry as well as interconnection and its application to solve problems in daily life and technology. In fact, students often have difficulty in studying chemistry. The difficulties faced by students in studying chemistry are due to abstract concepts in chemistry (Chandrasegaran, *et al.*, 2008).

Bunce (2009) stated that to be successful in chemistry requires a good understanding rather than memorization. To facilitate the study of chemistry that

contains abstract and microscopic concepts, it can be utilized an ICT-based learning media.

The increasingly varied use of media has become a challenge for teachers in performing their duties as teachers in schools in order to achieve learning objectives (Purbasari, *et al.*, 2012).

According to Handika, *et.al* (2012) Learning media has special benefits that can be considered as research materials, including: (1) Submission of materials can be uniformed, (2) The learning process becomes more interesting, (3) Student learning process, (5) The learning quality of students can be improved, (5) The learning process can occur anywhere and anytime, (6) The teacher's role can be turned towards a more positive and productive.

The use of instructional media is one way to support the achievement of learning objectives. The use of appropriate media and variations in the learning process can increase the motivation to learn and can reduce the passivity of students. Learning media should be packaged interesting so that students can linger learn a learning material. Learning media are often used in schools such as power point, learning video, text modules. But the learning media do not be used at any time by students. Less varied media is distributed not solely teacher error, but because of less optimize technological developments.

The role of learning media can also be used to improve students' learning motivation (Hess, 2014). Motivation is an internal state that generates / activates, directs / guides, and retains behavior over time (Slavin, 2009 and Woolfolk, 2009). Motivation is what determines the intensity of student learning effort, as the driving force and guarantee the continuity of student learning so that the desired objectives can be achieved (Prasetyo, *et al.*, 2015).

Technological development at this time has grown rapidly, especially in information and communication technology (ICT). One of the products ICT development today is a smart-phone. Smart-phone is a device that allows for make phone calls at the same time in which there is a functional PDA (*Personal Digital Assistant*) capable like a computer, which can be used to send email, document editing, reading electronic books, used GPS. In addition, the smart-

phone must also have an operating system in it. The current highly popular operating system is the Android operating system. Android is a *mobile operating system* that adopts Linux operating system, but has been modified.

Based on the observations made in SMA Negeri 1 Tebing Tinggi, there is no learning media that utilizes Android smart-phones. The students are still using the laptop or even some are using the manual to support learning in school. In addition, teachers are still using conventional methods in teaching so that learners feel bored and less interested in learning activities. They prefer to do other things like talking to their friends and busy with their respective hand-phones.

To overcome this problem, it is necessary to change teachers who are able to make chemistry lessons become interesting and liked by students. To obtain optimal results it is necessary to plan the classroom atmosphere in such a way by using appropriate learning so that students obtain optimal learning outcomes. In this case, innovation is also needed in the application of the right form of learning, such innovation in addition to done by teachers in teaching and learning process in the classroom, and can also be done by developing student worksheets used in chemistry learning. One of the media used is android applications.

According Sambodo (2014) android can be a complete learning media in the delivery of a learning material. Many research companies dub android as smart-phones (*smart-phones*), because android is formed on linux software that is *open (open source)*, which means the developers can create an application in accordance with the creativity of each individual (Mulyana, 2012), with so android can be used anywhere.

The more users you have and use a smart-phone, the greater the chances of product use of ICT in education. One such opportunity is learning media in the form of an Android-based student worksheet that utilizes mobile or mobile devices such as smart-phones to provide flexibly accessible learning benefits. Because the student worksheet is a means of learning that can be used by teachers in increasing the involvement or activity of students in the process of teaching and learning.

Student worksheet using Android is used to improve the skills and skills of students in the basic competence base animation stop motion. Student worksheet using Android based is made by utilizing web editor using App Inventor. App Inventor is an application provided by Google Labs to create applications running on the Android operating system. The presence of this Android- based student worksheet provides an opportunity for students to learn the material that is less dominated anywhere and anytime as well as providing a means of questions and practical procedures that must be done by the students.

Based on the above background, the researcher tries to develop the Student Worksheet in chemistry learning and to process the use of android application in the development of student worksheet to increase the motivation of studying the high school students. To support success in learning activities, the researchers are interested in conducting research entitled "**The Development of Student Worksheet Using Android on Salt Hydrolysis Materials**".

1.2 Problem Identification

Based on the background of the problem can be identified the following problems:

1. Students' difficulties in learning abstract chemical concepts
2. Learning media based on android has not been used in studying chemistry
3. Learning media is less varied because it is not optimizing the development of technology
4. Android smart-phone has not been used as a learning medium
5. Student Worksheet using android application has not been used in the teaching-learning process.

1.3 Problem Limitation

In order for this study not to deviate from the research objectives then the problem needs to be limited. From the background and identification of the above problems, then the limitations of the problem in this study are as follows:

1. Learning media created can only be operated using android phone and can be learned learners before the learning process to understand the concept of the material
2. Learning media created containing materials, quizzes, exercise questions and discussion of related exercises on the salt hydrolysis based on basic competencies in the curriculum 2013
3. Developed learning media can be distributed by play store application
4. The developed android application is used as an independent learning media of SMA / MA class XI students who are easily accessible without internet connection (offline)
5. Trials were conducted on students to find out student responses based on student worksheets using android.

1.4 Problem Formulation

To provide direction that can be used as a reference in research, then made the formulation of the problem as follows:

1. How the development stages of Student Worksheet using android on Salt hydrolysis materials as a practical, economical, moveable and instructional learning media in accordance with the facilities of the learners?
2. How the quality of the Student Worksheet using android which has been compiled?
3. How does the student's response /assessment to Student Worksheet using android applications on Salt Hydrolysis material?

1.5 Research Objective

Based on the above problem formulation, as for the purpose of this study are:

1. To know the development stages of Student Worksheet using android on salt hydrolysis materials as a practical learning media, economical, moveable and in accordance with the facilities owned by students.

2. To know the quality of Student Worksheet used android which has been compiled.
3. To know the student's response or assessment to the Student Worksheet using android application on salt hydrolysis material.

1.6 Research Benefits

The expected benefits of this research are:

1. For Students

- a. Increase the interest of learners in studying chemical materials about Salt Hydrolysis
- b. As an independent learning media that can be obtained via blue-tooth and can be disseminated via blue-tooth

2. For Researchers

This research is useful for researchers because it can improve insight and knowledge in training skills as an educator and can improve the skills of researchers in making learning media for the learning process.

3. For Teacher

The existence of practical experience in the field of scientific research can add insight into thinking and deepen the ability in the use of effective and efficient learning media in the learning process.

4. For School

Improving the quality and quality of schools through improving student learning outcomes and teacher performance in schools

5. For Further Researchers

As an information material for research to be able to develop further research better

1.7 Operational definition

1. Research development is an attempt to develop effective educational products in the form of learning materials, media, strategies, or other materials in learning to be used in school not to test the theory.
2. Learning is a process undertaken by an individual to gain a whole new behavioral change, as a result of the individual's own experience in interaction with his environment.
3. Media is the intermediary or messenger of the sender to the recipient of the message.
4. The student worksheet is a worksheet that provides learning instructions on selected topics or subject matter and is accompanied by questions or exercises.
5. Android is an operating system for Linux-based mobile devices that includes operating systems, middleware and applications.
6. An application is a collection of program commands created to perform certain tasks.
7. Basic competence is the content or competence consisting of attitudes, knowledge, and skills sourced from core competencies that must be mastered by learners.