CHAPTER I
INTRODUCTION

1.1 Background

Muchtar (2004) explain chemistry is one of the natural science 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 lesson.

The objective of chemical subjects based on the standard content of chemistry subjects SMA / MA (Permendiknas RI Nomor 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.

Bunce (2009) states that to be successful in chemistry requires a good understanding not by memorizing. To facilitate the study of chemistry that contains abstract and microscopic concepts, it can be utilized an ICT based learning media.

In 2013, an estimated 24 % of mobile phone users in Indonesia owned a smartphone and this figure is projected to more than double to 53 % by 2017. The number of mobile phone users in the country stood at around 173 million in 2013 and will rise to over 195 million people by 2017. This means that a projected 103.5 million people in Indonesia will own a smartphone in 2017, equivalent to 37.5 % of the entire population. In 2013, mobile phone internet user penetration in the country was at 22.8 % and this is expected to almost double to 45.3 % by 2018. Some of the most popular online services amongst mobile internet users in Indonesia were Gmail, Yahoo Mail, and BlackBerry Messenger (BBM) (Statista,2018). Based on research aims to the develop the English for Disability (EFORD) application, on Android-based learning english media for Visually Impaired students and determine its based this on assessment of matter expert, media expert, special needs teacher and students.The development of this application through five phases: (1) Analysis of problem, through observation and interviews. (2) Collecting information as product planning/ analysis of the needs of the media as required of blind children. (3) The design phase of products such as the manufacture of flow and storyboard navigation map. (4) Design validation phase form of an expert assessment of the media are development. (5) Testing products phase, such as assessment of the application by blind

students. The adoption and used ICTs in education have a positive impact on teaching, learning, and research. ICT can affect the delivery of education and enable wider access to the same. In addition, it will increase flexibility so that learners can access the education regardeless of time and geographical barriers. It can influence the way students are taught and how they learn. It would provide the rich environment and motivation for teaching learning process which seems to have a profound impact on the process of learning in education by offering new possibilities for learners and teachers. These possibilities can have an impact on student performance and achievement. Similarly wider availability of best practices and best course material in education, which can be shared by mean of ICT, can foster better teaching and improved academic achievement of student (Richardson,2009).

Phone's features are now more dependent on software or application.Android is an open source Operating System for Mobile devices, It is initially developed by Android, Inc., which was bought by Google in 2005, Android was revealed in 2007, along with the founding of the Open Handset Alliance – a consortium of software,hardware and telecommunication companies dedicated to advancing open standards for mobile devices. According to the Wikipedia in July 2013, there were over one million Android application were published on the Google Play store, and over 50 billion applications downloaded. According tothe Wikipedia in April–May 2013 survey of mobile application developers found that more than 71% of developers created applications for Android. History of Android with the release of the Android beta version in November 2007. Android 1.0 (First version),the first commercial version was released in September 2008. As we all know that Android is introduce by Google and the Open Handset Alliance(OHA), and since its initial release, we have seen a number ofupdatesto its base operating system. • Alpha (1.0) • Beta (1.1) • Cupcake (1.5) • Donut (1.6) • Éclair (2.0–2.1) • Froyo (2.2–2.2.3) • Gingerbread (2.3–2.3.7) • Honeycomb (3.0–3.2.6) • Ice Cream Sandwich(4.0–4.0.4) • Jelly Bean(4.1–4.3.1) • KitKat (4.4–4.4.4) • Lollipop(5.0) • Marshmallow (6.0).(Singh,2016).

As the times progressed, all the fields in all aspects of life came to flourish, including the field of education. Progress in education, especially in science and technology, has an impact on the learning process in schools. The learning process initially takes place in one direction and is centered on the teacher (teacher centered), such as the behavioristic concept, where the educator (learning resource) provides and pours as much information to the learners. Learning process that takes place like that causes learners cannot develop their creativity and thinking patterns. Therefore, the concept of learning is

approached by using a constructivism paradigm, in which learning is the result of its own construction (learners) as a result of its interaction with the learning environment (Daryanto, 2010).

The current 2013 curriculum is the same as the constructivism paradigm, where learners are required to find information independently of their interaction with the environment inside and outside the school. According to Daryanto (2010), the concept of environment includes learning places, methods, media, assessment system, as well as facilities and infrastructure needed to package learning and organize learning guidance, making it easier for learners to learn. The role of teachers in the learning process based on constructivism paradigm is only as facilitator, mediator and mentor.

The use of Student Worksheet in the learning process is one of the efforts to create a more qualified learning. However, from various kinds of Student Worksheet that are often used and provided by the school for the learning process, especially chemistry is the Student Worksheet in the form of print media.

Based on observations in SMA NEGERI 1 PERBAUNGAN, many students who use android smartphone but the utilization of smartphones as a media of learning is not optimal because only a few students who know the existence of learning media or Student Worksheet using android smartphone. In addition, teachers are still using conventional methods in teaching so that learners feel bored and less interested in learning activities.

According Sambodo (2014) android can be a complete learning media in the delivery of a learning material. Many research companies naming android as smartphones, because android formed on open source software (Linux), which means developers can create an application in accordance with the creativity of each individual, with so android can be used anywhere. The research conducted by Sambodo entitled “Pengembangan Media Pembelajaran *Mobile Learning* berbasis Android untuk Siswa Kelas X SMA/MA” with development model 3D (Define, Design, Develop). The results of development research have excellent quality.

Development of Student Worksheet is required to be able to overcome the problems in the learning process, one form of the development of Student Worksheet is the use of information and communication technology in the field of education. The form of the utilization of information and communication technology is mobile learning (m-learning), one part of electronic learning (e-learning). M-learning is a media of learning by using mobile devices such as mobile phones, PDAs, laptops, and tablet PC (Astra, 2012).

The Students’ Worksheet based on android that developed contains material and exercise questions that learners can use as self-learning media. The material contained in

this Worksheet developed is compiled from various learning sources, so as to provide students with a wider insight into the material. Insights held by learners is what affects the liveliness in the learning process.

Based on description above, the researcher are interested to develop of student worksheet using android mobile. So the title of this rsearch is : **The Developmentof Student's Worksheet Based Android Mobileon Salt Hydrolysis Topic.**

1.2 Problem Identification

Based on the background explained above, the problem identification in this research includes:

1. How is the properness of Student's Worksheet existed ?
2. How is the properness of Student's Worksheet Based Android Mobile ?
3. Does Student's Worksheet based on android can increase student learning achievement?
4. Does Student's Worksheet based on android can increase students motivation ?

1.3 Problem Limitation

To make this research well directedthe problem needs to limited to applying of students' worksheet base it (android mobile) on salt hydrolysis topicincreasing student motivation to studyand student outcomes.

1.4 Problem Formulation

The problem formulation of this research are:

1. How is the quality of student's worksheet existed ?
2. How is the quality of student's worksheet based android mobile ?
3. Does students' worksheet based android mobile on salt hydrolysis topic give higher significant difference compared to direct instruction worksheet model to student learning motivationon salt hydrolysis topic?
4. Does student's worksheet based android mobile on salt hydrolysis topic give higher significant difference compared to direct instruction worksheet model to student outcomes on salt hydrolysis topic?

1.5 Research Objective

The objectives of this research was used:

1. To know the quality of Student's worksheet existed.

2. To know the quality of Student's students' worksheet based android mobile
3. To know the Student's worksheet based android mobile on salt hydrolysis topic give higher significant difference compared to direct instruction worksheet model to student learning motivationon salt hydrolysis topic
4. To know Student's worksheet based android mobile on salt hydrolysis topic give higher significant difference compared to direct instruction worksheet model to student outcomes on salt hydrolysis topic.

1.6 Research Benefit

1. The result of this study are expected to provide information to teachers the chemistry of learning difficulties experienced by student's worksheet especially in salt hydrolysis topic.
2. This research help the students finding the problem of chemistry, especially salt hydrolysis topic.
3. This research can be used as references for the future research.

1.7 Operational Defenition

1. Android Mobile is use of computers to store, retrieve, transmit, and manipulate data, or information, often in the context of a business or other enterprise. It is considered to be a subset of information and communication technology (ICT).
2. Salt hydrolysis is a reaction in which the cation or anion or both of a salt react with water to produce acidity or alkalinity.
3. Student's Worksheet
4. Motivation
5. Student Outcomes.