

CHAPTER I INTRODUCTION

1.1 Background

Education is a conscious and systematic effort by people who are responsible for influencing learners to have nature and character according to the ideals of education (Achmad, 2004:34). The ideal of education or known as the purpose of education is the direction to be addressed through education that can be realized in the learning process both inside and outside the classroom.

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

According to (Mughtar, 2004) chemistry is one of the natural sciences that plays an important role and a significant influence on the development and technological progress. But on the other side chemistry also can be categorized into a science that is full of abstract concepts, this abstraction makes students difficult in enjoying and understand the chemistry lesson further. One of chemistry topic that requires a long time understanding to study is electrolyte and nonelectrolyte solution topic. Electrolyte and nonelectrolyte solution topic is a chemical material that requires a long time understanding to study, sufficiently large subject matter so it needs a media that can be used by learners to learn independently to facilitate the learning process considering the learning time in school is less than outside school. Above statement was supported by many researchers that research electrolyte and nonelectrolyte solution such as “Pengaruh Penerapan Model Pembelajaran Kooperatif Tipe Make-A Match Terhadap Hasil Belajar Siswa Pada Materi Larutan Elektrolit Dan Nonelektrolit Di SMA PGRI 2 Kota Jambi” by Horizon in 2016. To make students easier in understanding electrolyte and nonelectrolyte solution topic, a teacher should find an appropriate media.

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.

The use of learning media is one way to support the achievement of learning purposes. 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 powerpoint, video learning, text modules. But the learning media cannot be used at any time by students. Less varied media is distributed not solely teacher error, but because of less optimize technological developments.

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. The 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 construction (learners) as a result of its interaction with the learning environment (Daryanto, 2010:3-4).

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: 5), the concept of environment includes learning places, methods, media, assessment systems, 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 the

learning process is one of the efforts to create more qualified learning. However, 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 or powerpoint.

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: 175-176). Mobile devices that are majority-owned and used in everyday learners are communication tools in the form of android mobile phones.

According to Sambodo (2014), android can be a complete learning media in the delivery of learning material. Many research companies naming android as smartphones, because android formed on open source software (Linux), which means developers can create an application by the creativity of each, with so android can be used anywhere.

The Student 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 leaning sources, to provide students with a wider insight into the material. Insight held by learners is what affects the liveliness in the learning process.

Based on the research conducted by Rosyid Fajar Rizqi entitled Pembuatan Aplikasi Lembar Kerja Siswa Elektronik (ELks) Berbasis Android in 2013. Making an Android-based electronic student worksheet developed or designed with Eclipse software installed on the ADT. The results of the research development of Electronic application design Student Worksheets on android devices can help students in learning to face school examinations. And this application is made on a mobile basis so users can run this application anywhere.

Based on the above background, the researcher tries to develop Student Worksheet by using an android application on electrolyte and nonelectrolyte solution material to facilitate students study independently and learning activities, especially in SMA N 14 Medan. Then the researcher is interested in conducting research entitled:

“The Development of Inquiry Training Students’ Worksheet by Using Android on Electrolyte and Nonelectrolyte Solution Topic”.

1.2 Problem Identification

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

1. Students’ Worksheet used in the chemistry learning process is still limited to print media (book)
2. Students’ Worksheet should develop by technological developments and can be used by learners as a self-learning media that is practical, economical, and not bound by time and space
3. Many learners who own and use mobile devices in the form of android phones, but not yet used optimally to expedite the learning process
4. Students’ are required to understand the electrolyte and nonelectrolyte solution learning topic

1.3 Problem Limitation

The problems studied in this study are limited to:

1. Students’ Worksheet was developed by using ionic framework application
2. Android based student worksheet containing material, exercise questions and discussion about electrolyte and nonelectrolyte solution matter related to curriculum 2013

1.4 Problem Formulation

Based on the above description, can be formulated by research problems as follows:

1. How is the properness of android based student worksheet?
2. Can android based student worksheet increase student learning achievement?
3. How are students learning motivation with android based student worksheet?

1.5 Research Objectives

Based on the above problem formulation, the research objectives are as follows:

1. To know the properness of android based student worksheet as practical and economical learning which has been compiled.
2. To know the effect of android based student worksheets can increase student learning achievement.
3. To know the students learning motivation with android based student worksheet.

1.6 Benefits of research

The results of this study are expected to have benefits for teachers and students in the general and researchers in particular. In general, the benefits obtained from this research are:

1. For Educators (High School Teachers)

The existence of this research adds chemical learning media in the form of Students' Worksheet on Electrolyte and Nonelectrolyte Solution topic that can be used by the teacher as a means independent learning to facilitate the learning process.

2. For High School Students

- a. Increase the interest of students in studying Electrolyte and Nonelectrolyte Solution. Improving the comprehension of learners that can improve the learning achievement of students.

b. For Researchers

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

c. For Chemistry Education Study Programs

They can add references to develop other products and obtain additional library reading materials related to research, especially the development of android based student worksheet on Electrolyte and Nonelectrolyte Solution.

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 schools not to test the theory (Gufon, et al, 2007: 5)
2. Students' Worksheet is a student manual used to conduct the investigation or problem-solving activities (Trianto, 2009)
3. Android is an operating system for Linux-based mobile devices that includes operating systems, middleware and applications (Nazruddin, 2012: 1)
4. Inquiry Training Learning Model is an effort to help students to develop critical thinking skills, problem-solving abilities and in general to develop intellectual skills (Joyce et al, 2011: 215)
5. Properness of teaching material is a proper teaching material about electrolyte and nonelectrolyte solution topic that arranged systematically, operational and accompanied by guidelines for using it
6. Learning achievement is a real value that reached by the student in cognitive skill in the electrolyte and nonelectrolyte solution topic measured through the pretest and posttest
7. Student Motivation is an encouragement of students to study.

8. The electrolyte solution is a solution that can conduct electric current by giving symptoms in the form of lights on the test equipment or the emergence of gas bubbles in solution. Based on its power to deliver electricity, electrolyte solutions can be divided into strong electrolytes and weak electrolytes.

nonelectrolyte solution is a solution that cannot deliver electric current by giving symptoms in the form of no bubbles in the solution or the lights do not turn on the test equipment.



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