

CHAPTER 1 INTRODUCTION

1.1 Background

The development of chemistry learning materials based android mobile to increase motivation and student achievement is very important to help student of senior high school in their learning process. Development learning materials expected can motivated students and Also can support the students to be more active in the learning activity. The innovation is conducted to provide standard learning material for senior high school students to make it easy to learn and to improve student's competence.

Online learning resources can be designed to present learning modules or in this case referred to as electronic modules. Especially at this time in Indonesia, the widespread use of Android- based smartphones. (Rosenberg, 2001) stated that the development of smartphone products with the android operating system experienced remarkable development, while the development of android usage in Indonesia reached 40% per year. Telkomsel customers who have used smartphones are 18 million customers and 2 million of them are using Android smartphones.

Education is a container that serves to prepare human resources who have competence in performing the functios of life. The education system should not be separated from changes that occur in various areas as a result of globaliation. The rapid development of science and technology today can have a significant influence on the world of education. All the components of education are expected to adapt so did not experience gaps in dealing the advancement of age. In a effort to educate the nation, hence improving the quality of education becomes very important for sustainable development in all aspects of human life. The national education system continues to be developed in accordance with the needs and developments at the local, national, and global (Mulyasa, 2004).

The need for the new atmosphere on learning activities on chemical subject expected to make the students materially become active in learning, so that able to improve student achievement (Siregar and Parera, 2013). One effort that can be done by teachers to achieve the national goal is developing teaching materials into various form material includes a wide range of teaching material. The learning materials has many form and variation to develop teaching materials of teacher required to continue-constantly improving ability. If you do not have the ability developing teaching materials are varied, teachers will be stuck in learning situations monotonous and tend to be boring for students (Hamdani, 2011).

Learning activity is a process containing a series the activities of teachers and students on the basis of reciprocal relationship that take place in an educational situation to achieve certain goals. To able to achieve a good mutual relationship, the teachers are required to create a meaningful and meaningful and effective learning process so that the learning process can run smoothly and learning objectives was achieved.

Education is a forum for educating the nation, because through education to create well-educated human resources capable of facing the development of increasingly faster times. However, if the quality of education is still low, then that is created are human resources low until now the quality of education in Indonesia has not shown a satisfactory result. This condition also occurs in chemical education at this time. One indicators of the quality of education is the acquisition of student learning outcomes. Student learning outcomes can be seen from the success of teachers deliver the subject matter that the results meet specific intractional objectives of lesson material, absorptive capacity and the level of students undrestanding of the lessons delivered.(Djamarah and Zain, 2006).

In line with efforts to improve the quality of education, learning innovation is one thing attention besides supporting facilities learning. Learning innovation and integration character education will be given the opportunity improve the quality of education and develop in accordance with the national character of cultural in Indonesia (Situmorang, 2013). Where the use of technology information for learning

have also been encouraging learning shifts from conventional learning to independent learning so learning impression remembered by students (Thomkins, 2006).

As an educator, a teacher is not just to perform its role in presenting the material in front of the class to achieve the learning objectives fields studies which it is responsible, but also expected to have skills and competencies that can support the profession. The learning process in education generally involves the four main components, namely students, teachers, the learning environment and materials lesson. The fourth of these components affects students i achieving goals learning. Each student has a different ability levels seen from the aspect of perception, its knowledge in the field will be studied, learning motivation, learning skills, and goals of study. To improve student achievement, teachers are required to make more innovative lessons that encourage student to learn optimally, with independent learning in the classroom. Therefore, media learning to be effectively and selectively used in accordance with the principal topics that are taught. Innovative multimedia development in this study expected to help the problems in learning. So needed educational innovation, because innovation is a plan or pattern that can be used to build the curriculum, designing instructional materials and as director of learning activities within or outside the classroom. Innovation in education is often associated with the renewal that comes from creative thinking, finding, and modification that includes ideas and methods used to solve a problem of education (Riski et al, 2006).

With educational innovation can make the student become more active in teaching learning process, because active learning involves not only experience doing something with the material learned but also reflection and dialogue, which can occur either alone or in a group (McCormick, 1996). According to Prince (2004), active learning is defined as any instructional method that engages students in the learning process. In short, active learning requires students to do meaningful learning activities and think about what they are doing. While this definition could include traditional activities such as homework, in practice active learning refers to activities that are conducted in the classroom. The core elements of active learning are student's activity and engagement in the learning process. Active learning is often contrasted to

the traditional lecture where the students passively receive information from the instructor.

Learning media is a very essential thing to produce a quality learning process. Learning media is defined as graphic, photographic, or electronic tools to capture, process and reconstruct visual and verbal information (Arsyad, 2003). Intended learning media are slide power point, videotapes, diagrams, printer materials, software computer and web based learning. In principle, the purpose of learning media is to facilitate the occurrence of the communication process and to improve learning outcomes.

Many objects that can be used as a media of learning, therefore, a teacher must be able to create learning media in accordance with the material being taught. Learning media become one of a factors for interest in learning and learning success in achieving predetermined competencies. Learning media will be developed into a learning media based e-learning. Accordance Situmorang (2014), the utilization of information technology, multimedia and e-learning for learning through online facilities have been able to push learning shift from conventional learning to independently learning so as to facilitate students to learn not only depends on lecture but it comes from your self. E-learning is a learning process (learning) use/exploit information and Communication Technology (ICT) as tools that can be available whenever and wherever needed, so as to come over the contains of space and time (Sutana, 2009)

Accordance to joice and well in Hills (2003), innovation in education are often linked with the renewal that comes from the result of creative thinking, findings and modifications that make the ideas and methods that are used to adreas a problem of education. Educational innovations also include a plan or pattern that can be used to build learning instructional materials in the classroom or outside class including learning materials. Thus, innovation in the learning materials very urgent to implement so that the delivery of the material to be focused and able to support to achievement of competence of student in learning.

Therefore, it is necessary that learning can make students understand about the subject presented and can be applied in everyday life. Need a concrete attempt to design learning which gives ease to students in solving problems and guide students to associate of science in real life creatively (Giantcarlo and slunt, 2004).

A good learning materials must be able to present the teaching material according to the demands of the curriculum, following development of science and technology can bridge the learning for competence has been established can be achieved (Rosenberg, 2001).Based on observation and interviews in SMAN 1 Perbaungan, in this school the teacher using the source of learning material from textbook, student worksheet and internet. All the students in this school have a freedom to bring smartphone/android to school. Especially chemistry teacher only using textbook and student worksheet. They are doesn't have make the new innovated chemistry learning material based on multimedia learning, internet web learning and android mobile learning. Based on problem identification the researcher wont to make the chemistry learning material based on android mobile to improve the motivation and students achievement in the teaching learning activities.

Learning chemistry requires the skills of a teacher so that students easily understand the material provide by the teacher. If teacher is not teaching the student to master the strategy will be difficult to accept the subject matter perfectly. Teachers are required to conduct inovation and creativity in implementing the learning, so that student learning outcomes satisfactory. Based on this problem researchers intend to make innovation of teaching materials, in order to facilitate the students to understand the concept learned. The development through innovation chemistry textbook learning materials are needed by using e-learning media/android mobile that can improve quality of education. Chemistry is one of disciplines of the natural sciences as one topic of chemistry lesson that studied in Senior High School is "Buffer Solution". Based on the description, researchers are interested in doing some research and trying to develop learning module in learning chemistry. The development of learnig module chemistry is very important so can motivated student to learn and make the student active in the process of learning and teaching and would help the

student to learn chemistry easily. So it necessary to conduct research entitled “**The Development of Chemistry Teaching Material Based Android Mobile to Increase Motivation and Student Achievement on Buffer Solution Topic**”.

1.2.Problem Identification

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

1. Chemistry teaching material used in chemistry learning process is still limited to print media (book).
2. Chemistry teaching material should develop in accordance with 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 buffer solution learning topic.

1.3.Problem Limitation

The problems studied in this study are limited to:

1. Chemistry teaching material was developed by using ionic framework application.
2. Chemistry teaching material based on android mobile containing material, exercise questions, video, picture, and discussion about buffer solution matter related to curriculum 2013.

1.4.Problem Formulation

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

1. How is the criteria of chemistry teaching material based on android mobile according to (BNSP) is *Indonesia Education National Standard*?
2. What is the using chemistry teaching material based on android mobile can increase student achievement?
3. What is the using chemistry teaching material based on android mobile can increase student motivation?

1.5.Research Objectives

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

1. To know the criteria of chemistry teaching material based on android mobile according to (BNSP) is *Indonesia Education National Standard*.
2. To know the effect of using chemistry teaching material based on android mobile on student achievement.
3. To know the effect of using chemistry teaching material based on android mobile on student motivation.

1.6. Research Benefit

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

1. For Educators (High School Teachers)

The existence of this research adds chemical learning media in the form of Chemistry teaching material on Buffers solution topic that can be used by teacher as a self-learning tool to facilitate the learning process.

2. For High School Students

- a. Increase the interest of students in studying Buffer solution
- b. Improving the comprehension of learners that can improve student achievement.

3. 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 chemistry teaching material for the learning process.

4. For Chemistry Education Study Program

They can add references to develop other product and obtain additional library reading materials related to research, especially to development of android based chemistry teaching material on buffer solution.

1.7.Operational Definition

Based on that explanation, the operational definition as the following:

1. Research development

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 (Gufron, et al, 2007).

2. Learning materials

Learning materials are a modification of material to meet attractive one. Said innovative because the user will experience the innovative and being active for example actively paying attention to images, pay attention to the writings of varying color or motion, sound, video and even animated films (Sanjaya, 2010)

3. Android mobile

Android mobile is a Linus-based operating system for celluler phones such as smartphones and tablet computers. Android provides an open platform for developers to create thier own applications for use by various mobile devices. Initially Google Inc. Buy adroid inc. Newcomer who makes software for cellphones. Then the develop android, an Open Handset Alliance was formed, a consortium of 34 hardware, software and telecommunications companies, including Goog56le, HTC, Intel, Motorola, Qualcomm, T-mobile, and Nvidia(Supardi, 2012).

4. Inquiry Training Learning Model

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).

5. BNSP/ *Indonesian Education National Standard*

Indonesian Education National Standard (Badan Standar Nasional Pendidikan) is an independent institution, professional, and independent mission to develop, monitor and evaluate the implementation of national education nasional standard (BNSP, 2006).

6. Student achievement

Student achievement are statements that describe significant and essential learning that learners have achieved and can reliably demonstrate at the end of a course program (Lesch, 2012).

7. Motivation

Motivation is able to initiate to succeed in our choice and at the same time lack of motivation can initiate to major barrier that prevents the success (Valarmathie, 2017).



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