

## CHAPTER I

### INTRODUCTION

#### 1.1 Background

The development of interactive and innovative chemistry learning material is very important. Interactive learning material can motivate student to learn and make the student active in the process of learning and teaching and Innovative learning material would help the student to learn chemistry easily.

One way to improve people's lives, have to have an education and will be better when education ended at the university because education is the foundation to develop in accordance with the capabilities available to it. But, education in Indonesian is problematic because of quality is still low. Based on a survey conducted by *United Nations Educational, Scientific and Cultural Organization* (UNESCO), to quality of education in developing countries in Asia Pacific, Indonesian ranks 10 (ten) out of 14 (fourteen) countries, while quality of teachers, Indonesian at level of 14 (fourteen) from the 14 (fourteen) of developing countries (<http://van88.wordpress.com/makalah-permasalahan-pendidikan-di-indoseia/>). However, the government is trying best way to improve quality of education, one of them at the university. Improve the quality of education can be conducted continuously through conventional (traditional) or development of interactive and innovative. Interactive effect on process of educational innovation (<http://murniathie99.wordpress.com/2013/05/04/inovasi-pendidikan/>).

One of improve the quality of education is to develop an interactive and innovation on learning materials used in process of teaching and learning in classroom in order to learning materials be qualified. Development of interactive and innovation on learning materials is very interest to be discussed because of learning materials that qualified can improve comprehension and ability university students. Especially to meet quality of learning materials used students at the State University of Medan. Therefore, creation of learning materials are necessary to

consideration accurately where learning materials not only as a source of learning, but has a particular classification. Based on classification that's, lectures choose which is material will be presented in materials preparation planning in order to achieve of teaching objectives have been formulated previously.

Learning media is a part that can't be separated and it's integration of the learning is used. University students need learning media as learning resources are used as learning materials to help them understand and appreciate the chemistry lesson. Learning media as a learning resource that is used in college is a book, is still traditional. Books used university students are still less interactive and innovation so boring and just focus on center of the lecture. Learning media become one of factors for interest in learning and learning success in achieving predetermined competencies. Learning media will be developed into a learning media based e-learning. According to Manihar and Andry (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 university students to learn not only depends on lecture but it comes from yourself. 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 constraints of space and time (Sutanta, 2009). Thus, learning materials will be developed in electronic and print form learning materials, create a link to a video or animation or tutorial website that provides an interactive learning so university students make easier to receive and access lessons.

According to Tomlisonin (I Wayan Dirgayasa., 2013) learning material refers to anything which is used by lectures or learners to facilitate learning and teaching can obviously be cassettes, video, CD-ROM, dictionaries, workbooks, photocopied exercises, newspapers, or instructions both of print and non print given by teachers, etc. One of the efforts to reduce saturation of learning in students is to develop learning materials to make it more interactive and innovation. In developing learning materials required to develop, improve and

pour the ability and knowledge. According to Hamdani in (Rudyanto, 2009) If it doesn't have ability to develop teaching materials are varied, teachers will be stuck in a monotonous learning situation and tend to be boring for students. Good learning materials must be able to present learning materials in accordance with the demands of the curriculum, follow any developments in science and technology in order to achieve a predetermined competencies (Jippes, etc., 2010) in (Manihar and Novalina, 2012), therefore of preparation of learning materials quality is needed to help students to learn and fulfill needs of students to learning dependently.

The reality is shown, student's chemistry learning materials quality is still lacking. It can be seen from the learning materials use dare still elusive, learned and less used when students learn independently. This is due to the presentation of the material that is not attractive, less systematic and tedious to read the learning materials. Some of the requirements to make learning materials as a source of learning, namely the availability of which can be reached by learners, can help university students learn independently, and facilitate in the learning materials are complete and self-contained.

Chemistry is lesson that very important because it is founding our daily lives. But chemistry is still very difficult to study by students and as well as university students. In college, because books are abstract, general chemistry textbooks supplied is limited where limited in discussing each sub subject per topic especially electrochemical or even those topics are not described in detail, there are subtopics that are not described or loaded, loaded pickup only which is made without regard to be writing, design and language that used so it is not visible or less attractive and not or less loaded resource to support the material in the book so when the university students were given the task about this topic, university student seek potluck without learn until most university students were not seriously studied or even when presenting the task an dare just looking fora potluck literature and the book just to emphasize deliver the mere knowledge

without making the book become interesting and learning process only focused on faculty.

In college, electrochemistry learned in general chemistry in college. Electrochemistry topic is one of subtopics in basic chemistry. Electrochemistry studies Voltaic cells, standard electrode potential, electrolysis cell and corrosion., Electrochemistry material analysis is one of materials that are abstract and have a fairly high degree of difficulty to understand students (Iqma., Oktavia., and Neena., 2014). According to Arsani (in Iqma., Oktavia., and Neena., 2014), also assume that the electrochemistry material is considered as one of materials that are difficult to learn both of learner and lecture. This is because the delivery is so fast, lack of practice questions in acid base materials, as well as the lack of interaction with classmates because only centered learning to lecturer (Rasmawan, 2009).

Based on above description, steps need to be taken by researcher are creating chemistry teaching materials. Chemistry learning materials in form of learning material compiled by researcher to help provide clear and systematic information to students so that learning material can be media in the process of learning and teaching. Researcher developed learning material with electrochemistry as subject matter. So it is necessary to conduct research entitled **“The Development of Interactive and Innovative of Chemistry Learning Material on The Teaching of Electrochemistry”**.

## **1.2 Problem Identification**

Based on the above background, there are some problems can be identified in this research, as follows :

1. The arrangement of chemistry topic electrochemistry to order it is suited to the common curriculum.
2. Prepare an innovative and interactive chemistry learning material on the topic of electrochemistry in order the teaching and learning process can be proceeded optimum.

3. Develop an interactive learning material on the teaching of electrochemistry to make the student to be motivated to get involve in the learning activity.
4. Make innovation can be made on to the learning material of electrochemistry in order the student can easily to study chemistry
5. Standardize a developed learning material to meet the standard provided by BSNP.

### **1.3 Problem Formulation**

Based on the background that has been stated previously, then problem formulation in this research is:

1. How the arrangement of chemistry topic electrochemistry to order it is suited to the common curriculum?
2. How to prepare an interactive and innovative chemistry learning material on the topic of electrochemistry in order the teaching and learning process can be proceeded optimum?
3. How to develop an interactive learning material on the teaching of electrochemistry to make the student to be motivated to get involve in the learning activity?
4. What kind of innovation can be made on to the learning material of electrochemistry in order the student can easily to study chemistry?
5. How to standardize a developed learning material to meet the standard provided by BSNP?

### **1.4 Problem Limitation**

From the above problem formulation, that the problem limitation in order not to deviate from research objective, are:

1. Learning media that used in this research is a learning material.
2. Analyzing the General Chemistry textbook used in The State University of Medan on the topic of Electrochemistry.

3. Create and preparation of interactive and innovative learning material will be developed from General Chemistry textbook used in The State University of Medan.
4. Review and revise of learning material that developed interactively and innovatively by lecture's chemistry.
5. Development of interactive and innovative chemistry learning material only to standardization of learning material stage, not up to the implementation stage

### **1.5 Research Objectives:**

The objective of this research is to facilitate the understanding of students in study of electrochemistry. The specific objective have been achieved in this research, are following:

1. To arrangement of chemistry topic electrochemistry to order it is suited to the common curriculum.
2. To prepare an interactive and innovative chemistry learning material on the topic of electrochemistry in order the teaching and learning process can be proceeded optimum.
3. To develop an interactive learning material on the teaching of electrochemistry to make the student to be motivated to get involve in the learning activity.
4. To know what kind of innovation can be made on to the learning material of electrochemistry in order the student can easily to study chemistry.
5. To Standardize a developed learning material to meet the standard provided by BSNP.

### **1.6 Research Benefits**

The results of this study, it is expected to provide benefits for researcher, students and lectures. For researcher is obtaining of valuable experience and

increase the researcher's knowledge on analyze textbooks, create, preparation and develop an interactive and innovative learning material on the topic of Electrochemistry. For university student can improve understanding and activity of university student in the process of learning and teaching and capable improve interest them to use learning material when learn independently, and for lecturers are provide input and information as well as assist in the delivery and provide of learning materials to students as a source of learning.



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