CHAPTER I
INTRODUCTION

1.1. Background

The development of science and technology today has grown so rapidly in all aspects of life, especially in the field of information and communication technology. This has an impact on various aspects of human life, including in education (Linda, et al, 2018). Education is a human effort to develop its potential through the learning process to achieve the goals of national education. One way to achieve the goal of national education is to improve the quality of education in every level of education that exists through the development of the curriculum (Kurniawan, et al, 2018). Education in Indonesia has now entered the era of industrial revolution 4.0. This era was marked by advances in information technology as the main media in helping human life. The development of the digital era technology provides various positive impacts in supporting the success of the science learning process. Information technology can be used as an alternative to facilitate the needs of interactive learning media in schools.

Government regulation number 74 the year 2009 chapter II part one article 3 requires educators as a source of learning to be able to utilize computer technology to improve the quality of learning, especially in terms of designing or using learning media. Web-based chemistry learning generally has been circulating in the market but sometimes it is not following the expected learning objectives. Therefore, the website program for learning needs requires a design that is in line with the educational objectives stated in the curriculum so that the development of media through the product validity test is required.

The quality of education can be realized if a learning process is carried out effectively, meaning that the learning process can run smoothly, directed, and by the learning objectives. Many factors affect the learning process, both from the students themselves and from other factors such as teachers, facilities, environment, and the media used. The media plays an important role in the learning process. The success of learning is largely determined by two main components, namely the teaching method and learning media. The complexity of the material that will be conveyed to

students can be simplifed with the help of the media. The use of computer-aided learning media has a great influence on the attractiveness of students to learn and understand the material.

Based on observations, the researcher found that teacher who does not use the developed interactive learning media in the teaching and learning process. The teachers mostly still used conventional methods in the learning process. If a teacher delivering course material is still using conventional methods in the absorption of the subject matter which a student is not optimal. If it is carried out continuously without any variation in the method of learning we can assure that students will quickly bored and tired in the course.

Professional teachers are required to be able to innovate in delivering lessons to students, both in terms of presenting the material and testing the ability of students. The teacher must not only provide subject matter to students but must also try to make students easy to understand the material to be explained. For example, by using website-based interactive learning media to implement the development of science and technology in the learning process. The computer-based-learning process was more successful than traditional learning toward the gain of students' achievement (Akcay, et al, 2006).

Innovation and creation continue to be carried out in the world of education in general through technology and information. One example of innovation and creation is in the form of interactive learning materials based on the website, which can help in terms of delivering information in learning. Website-based learning is one of the superior products resulting from the development of information technology.

Using media in the learning process will affect students in understanding the subject matter delivered by the teacher. By utilizing various types of media by the development of increasingly advanced technology, students not only listen to the material but also see and do, so that the absorption of the material taught by students will increase. The current learning media is made as attractive as possible to facilitate the learning process, making teaching and learning activities interesting and effective

communication between teachers and students. Website-based learning is a learning medium that is currently developing.

The best-known and fastest-growing internet service technology is the World Wide Web (WWW) or commonly referred to as the web. This service uses hypertext links called hyperlinks to use and retrieve web pages from the server. Web pages can contain sounds, images, animations, text, and software programs that compile them into dynamic documents. Users can view the web from a browser that is a program that can display data in HTML format (web page scripts), internet services used in education with web-based teaching material (Harminingtyas, 2014).

Electronic learning (e-learning) is now increasingly recognized as one way to overcome the problem of education, both in developed countries and in developing countries. So e-learning is learning whose implementation is supported by technology services such as telephone, audio, video, satellite transmission, or computer. The use of the internet becomes a necessity in supporting work or daily tasks. Through the internet, distance and time factors are no longer a problem.

Web-based e-learning applications are expected to be a medium/facility used to help provide more time and space and be an interesting learning media innovation. The development of the web is expected to be beneficial because it has the potential to be used as a medium for the delivery of teaching materials. According to (Rahmawan and Sukarmin, 2013), the results of research conducted by attractive learning media can invite students to interact directly with learning material. Learning the material in student memory that is transcribed with the right media can last a long time because of the nature of the media that has a strong stimulus.

Based on the research was done by Rudi Purwanto (2014), discussed investigated the effectiveness of web-based learning media in improving student's achievement on the teaching of salt hydrolysis compared with textbooks. Conclude that the student's motivation of class taught by using web-based learning media has a higher significant difference compared with a class taught by using print media (book) at the significance of $\alpha = 0,05$. So, web-based learning media gives 13,706 % higher student achievement than print media (book).

Based on the research was done by Ika Trisna (2014), conclude that the results of student learning outcomes learned through the implementation of weblog-based e-learning with Think Pair Share (TPS) type cooperative learning are higher than the increase in student learning outcomes that are learned without e-learning based on weblogs with learning cooperative Think Pair Share type. Based on the data percentage of the increase in student learning outcomes e-learning based on weblogs with Think Pair Share type cooperative learning by 77.920% while the percentage increase in student learning outcomes taught without e-learning weblogs with Think Pair Share type cooperative learning by 66,20%.

According to Ayu Kartika (2018), the percentage result of increasing learning outcomes by using Web-based chemistry learning media as self-learning resources on salt hydrolysis materials is 60,9% and student perception toward Web-based chemistry learning media as self-learning resource on salt hydrolysis materials is 76%. Based on the result Web-based chemistry learning media as self-learning resources on salt hydrolysis materials can improve the learning outcomes and self-learning, anywhere, and help the students that do not follow up the tutoring.

The interactive learning website developed has several features such as images, animations, videos, exercises, and mind mapping. This will be developed later referring to the Research and Development research model by Borg and Gall, research design development of interactive website-based teaching materials is expected to make students more interested and motivated to learn, especially in chemistry subjects.

Chemistry in science teaching, in particular, recognized the electrolyte and non-electrolyte solution. At the macroscopic level of material electrolyte and non-electrolyte solution, students learn through real observations of a phenomenon that is seen in daily experience, for example, the symptoms of electric conductivity through a solution. At the microscopic level, students learn the structure and processes at the particle level (molecules or ions) of the observed macroscopic phenomena, for example, the characteristics of electric conductivity and the ability of a solution to conduct electric current. At the symbolic level, students learn chemistry qualitatively and quantitatively, for example, the degree of ionization, and the use of formulas in

determining the ratio between the amount of ionizing substance and the amount of substance dissolved. Learning that can facilitate independent learning makes students interested in learning the electrolyte and non-electrolyte solution material using learning media (Dewi, 2014).

Based on description reviews these are complemented by the wide range of opinions about the results of previous research study, the researcher wanted to develop an interactive chemistry teaching materials based on website for the teaching Rate of Reaction with the title **"The Development of An Interactive Learning Material Based on Website on The Electrolyte and Non Electrolyte Solution Topic ".**

1.2. The Problem Identification

Based on the background of the problem has been described previously, some problems can be identified as the following:

1. Teacher still teach by using conventional method that causing a lack of student activeness in the learning process.
2. Lack of time available in the classroom learning.
3. Teaching media used by teachers still less attention of students to learning chemistry.
4. Teachers still do not utilize technology in teaching, especially internet media, so the instructional media of teachers does not attract the attention of students to want to learn chemistry.

1.3. The Problem Limitation

The limitations of the problem in this study are:

1. The teaching material was developed by using website-based e-learning media.
2. The material provided is limited, namely to electrolyte and non electrolyte solution material.
3. Learning media that created containing learning material, learning video, questions, and discussion related to electrolyte and non electrolyte solution.

1.4. The Problem Formulation

Based on the limitation of problem, the formulation of problem in this research are:

1. How is the feasibility of the interactive learning material based on website on the electrolyte and non electrolyte solution topic based on BNSP?

1.5. Research Objectives

The objectives to be achieved in this study are:

1. To know the feasibility of the interactive learning material based on website on the electrolyte and non electrolyte solution based on BNSP.

1.6. Research Benefits

This research is expected to provide the following benefits:

1. For Student

   As a learning media that can be accessed anytime and anywhere with an internet connection.

2. For the Teacher

   Add the chemistry learning media on electrolyte and non electrolyte solution material that can be used by teachers to facilitate the learning process.

3. For Researchers

   Can add insight, ability, and experience in designing and implementing interactive learning material based on website.

4. For Future Researchers

   As information material to be able to develop further research on e-learning website-based teaching materials on chemistry subject to electrolyte and non electrolyte solution.

1.7. The Operational Definitions

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

1. Development is an attempt to improve effective educational products, design, and processes that focused its study on the field of design of interactive learning materials and products such as media and learning processes in the world of education.
2. The interactive learning materials are teaching materials that combine several learning media (audio, video, text, or graphics) that are interactive to control order or the natural behavior of a presentation.
3. Website is a web page that is interconnected and their contents consist of various information in the form of text, sound, images, video, etc., where all the data is stored on the hosting server, which can be accessed, which convey various information from the website server to be displayed to users or users through a web browser.
4. The feasibility is a proper interactive learning material about the electrolyte and non electrolyte solution that arranged systematically, operational and accompanied by guidelines for using it. The properness was measured by the media and material validation sheet.
5. Electrolyte and non electrolyte solutions is a subject matter of X grade science in the odd semester. The electrolyte and non electrolyte solution is used to determine the compound which is categorized as a strong electrolyte, weak electrolyte, or non electrolyte solution.