CHAPTER I
PRELIMINARY

1.1 Background

According to Law No. 20 of 2003, Education is a conscious and planned effort to create an atmosphere of learning and learning process so that students actively develop their potential to have spiritual strength, self-control, personality, intelligence, noble character, and the skills needed by themselves, the community, the nation and country.

The problems of education in Indonesia are still quite diverse, including issues of teacher competence, curriculum issues to physical problems such as inadequate or inadequate learning facilities, so there is a need for mutual awareness and concrete action in overcoming various educational problems in order achieve maximum educational success to improve the quality of education so that it can support the progress of the country.

In the PISA 2018 issue, Indonesia was ranked below which was considered very low, in reading ranks, Indonesia was ranked 72 out of 77 countries, Mathematical Ranking was ranked 71 out of 77 and ranked 71 out of 80 in the science section. this is one of the problems that occur in Indonesia that needs to be considered.

Learning becomes a procedure used by educators in building students' thinking abilities and adding understanding in new knowledge such as efforts in mastering a concept in learning. The ability to think is divided into two, namely basic thinking skills and higher level thinking skills, basic level thinking skills only on things that are general in nature, such as memorizing,

remembering to repeat the information that has been obtained. Instead the ability to think at a high level from problem solving to making decisions. In making decisions to solve problems correctly students are expected to be able to have critical and creative thinking skills.

Higher Level Thinking Skills as Critical and Creative Thinking John Dewey argued that critical thinking is essentially as an active process, where one thinks things deeply, asking questions, finding relevant information rather than waiting for information passively (Fisher, 2009).

Critical thinking is a process in which all knowledge and skills are mobilized in solving problems that arise, making decisions, analyzing all assumptions that arise and conducting investigations or research based on data and information that has been obtained to produce the desired information or conclusions.

Critical thinking is no longer new in the world of education. Critical thinking is a procedure of thinking that has reasons and emphasizes in making decisions about what needs to be trusted and carried out in the evaluation. Critical thinking is an indicator of success in learning where critical thinking in learning is a cognitive process so students can identify, analyze and evaluate. Critical thinking can also raise many important questions and problems to formulate and assess information in a relevant and open-minded way. In the process of learning, critical thinking becomes a necessity that needs to be maintained and developed.

In assessing critical thinking students are expected to be able to identify, analyze, interpret, and evaluate evidence, arguments, claims, and data presented extensively through in-depth Assessment, as well as reflect it in everyday life - today.

Critical thinking is not only developed in the process of mere learning but also must be assisted with an instrument of critical thinking assessment to obtain data or information about the quality of appropriate learning and to

find out whether these critical thinking skills are achieved or not. To find out whether or not critical thinking skills are achieved towards students we can know about the results of assessments conducted by educators. In order for students to be able to provide answers to questions raised by educators, the reasoning is needed by students in learning until students are able to provide answers to questions given by educators because to answer these questions students need to have knowledge, understanding, and skills.

In previous studies, there were many studies on the development of questions to assess critical thinking skills, some of which were the development of critical thinking questions for junior high school students, the development of critical thinking questions in general, the Development of Questions for Geometry material and some of the questions of critical thinking for temperature physics problems and heat. From these research studies, the researchers decided to develop critical thinking questions for sound wave material.

As technological developments are increasingly developing in the 21st century, especially in the world of internet education has become common, everyone uses it, including students. If the evaluation process is done using the technology of Internet use, besides, it enables educators to do Input value and save on printing costs given the higher paper values, is also expected to evoke excitement and interest of learners in working on evaluation.

In addition to the influence of 21st-century developments, technology also has an influence on environmental development, namely on the development of learning systems towards environmentally-friendly learning. To realize environmentally-friendly learning can be done by reducing the use of paper in the world of education. Every year the use of paper in Indonesia is always increasing. Because paper is the most fundamental part of life so that its presence is taken for granted. Whereas in making paper the raw

material used is wood so that the use of wood as raw material also means reducing the number of trees in the world. According to P-WEC (Petungsewu Wildlife Education Center), it states that every 15 reams of A4 size paper require 1 tree to be cut down. In the next 5 to 10 years how many tree trunks will be cut down to meet the growing demand for paper. If this keeps happening, it will make the world environment more inhospitable to life. That way it is necessary to have an alternative and an effort in saving the environment so that the environment is not damaged.

In early 2020, the world have announced global pandemic, in Indonesia we declared national emergency for global pandemioc in march 2020.This global pandemic affect all human activity that decrease productivity, include education. As global Pandemic happens, government restricted all gathering, event, party, and all activity that could gather crowd. School is one of them, this make school cannot be operated as always and made teaching and learning process halted. This is the chance that technology will help education and that is E-Learning.

Along with the development of technology, especially in the field of education, the development of evaluation media in learning began to be widely used. Offering online practice application questions is easier to find. Even some applications can be accessed using an android smartphone. Among them, Moodle. MOODLE (short for Modular Object-Oriented Dynamic Learning Environment) is a software package produced for internet-based learning activities and websites that use the principle of social constructionist pedagogy. MOODLE is one of the applications of the concepts and mechanisms of teaching and learning that utilize information technology, which is known as the concept of electronic learning or e-learning.

Based on observations at the public high school 3 Medan for several days, and also interviews with students and teachers, the researcher found

that the physics teacher at the high school had not used renewable technology and was still using traditional media, namely print media. According to researchers, research on the use of E-Learning in schools is very important for developing Indonesian education. The development of E-learning based questions is also expected to make students tech-savvy and assist teachers in assessing students.

In the world of e-learning in Indonesia, Moodle is better known for its function as a Course Management System or " Learning Management System" (LMS). With a display like a web page in general, Moodle has a feature to present courses, where teachers can upload teaching materials, questions and assignments. Students can log in to Moodle then choose the course provided or be enrolled for it. Student activities in Moodle will be monitored by their progress and grades. In Indonesia itself, it is known that Moodle has been used for high schools, colleges, `and companies.

1.2 Identification of Problems

Based on the background that has been explained, the following problem identification is obtained:

1. There are many media that can be used in the evaluation process but educators only use print media.
2. Lack of educators in integrating learning using the latest technology, especially in evaluating learning.
3. Instruments needed that fit the characteristics of critical thinking physics and meet the goals in physics are to analyze, evaluate, create and utilize natural phenomena so that students' critical thinking skills increase.
4. A media-based or web-based question instrument is needed to make it easier for educators to value processing and provide varied evaluations for students so that the evaluation is not only focused on print media.

5. Global pandemic that force all teacher to learn E-learning and implement new method of evaluation.

1.3 Limitation of Problems

So that the problem observed is not too wide, therefore the following problem limitations are obtained in the study:

1. The target of the study which is used as a reference in research is physics class XI
2. The test instrument are based on Moodle E-learning LMS
3. The time and cost of research will be kept as low as possible so that research can be continued for further research.
4. Development focuses only on Critical thinking.

1.4 Problem Formulation

Based on the various problems that have been raised, the formulation of the problem in this study are:

1. What is the requirement to make good Critical thinking Test?
2. How to develop Critical thinking Test Based on E-learning Moodle?
3. How to integrate critical thinking test on e-learning?
4. What are the level of critical thinking on SMAN 3 medan?

1.5 Research Objectives

Based on the problem formulation that has been described, the purpose of this research is:

1. To find out how the characteristics of instruments about the ability to think critically
2. To determine how the validity and reliability items to think critically about the ability of the instrument to use in E- learning.
3. To Produce Critical thinking based Test on Moodle LMS

4. To determine critical thinking level of student in SMA 3 MEDAN.

1.6 Research Benefits

The benefits of doing this research are :

1. Theoretical Benefits

   The results of this study are expected to be able to add scientific insights and be able to develop mindsets in developing evaluation tools using web E-learning.

2. Practical Benefits

   a. For Students

      Able to provide useful knowledge for students during learning.

   b. For Educators

      Give something different to students in learning and build learning communication between educators and students.

   c. For Researchers

      To be able to add insight and knowledge about the development of evaluation tools using web E-learning to be able to become a provision for educators, especially in creative and innovative physics subjects and be able to motivate students in increasing understanding in learning physics.

   d. For schools

      Give schools an understanding of e-learning so that it can be applied in schools and increase school credibility. Schools can also use this research to assess the effectiveness of e-learning and question making techniques to assess critical thinking skills.