

CHAPTER I

PRELIMINARY

1.1 Background of the Problem

According to the National Education System 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 himself, society, nation and state (Hadijah, A 2016). Referring to Government Regulation Number 19 of 2005 concerning National Education Standards, the learning process in the education unit is held interactively, inspiratively, fun and challenging, motivating students to participate actively. The Education Unit Level Curriculum (KTSP) also requires students to have certain competencies in all subjects after the learning process. Competence is the ability to think, act and behave consistently as an embodiment of knowledge, skills and values Education is important in shaping the next generation of qualified nation in the present and in the future. The development of science and the development of learning outcomes instruments are very influential and important in the world of education.

Educational assessment according to Permendiknas Number 20 Year 2007 about educational assessment standards is the process of gathering and processing information to determine the achievement of student learning outcomes. Van De Walle in Agus and Jailani 2014 states that the principles and standards of assessment emphasize two main ideas namely assessment must improve student learning and assessment is a valuable tool for making teaching decisions. Assessment of learning outcomes by educators is carried out on an ongoing basis aimed at monitoring the process and progress of

student learning and to improve the effectiveness of learning activities. Assessment of learning outcomes by education units is carried out to assess student achievement in all subjects. Assessment of learning outcomes by the government is carried out in the form of national examinations. Aims to assess the achievement of graduate competencies nationally. In certain subjects in groups of science and technology subjects.

Assessment is not just about data collection of students but also its processing to obtain an overview of the process and learning outcomes of students. Assessment does not just give students a question then finish, but the teacher must follow up for the sake of learning.

To carry out the assessment, the teacher needs an assessment instrument in the form of questions both to test cognitive abilities, affective and psychomotor. Assessment is a very important activity in learning physics. Assessment can provide constructive feedback for both teachers and students. The results of the assessment can also provide motivation for students to perform better (Agus Budiman dan Jailani, 2014). Even assessment can influence learning behavior because students tend to direct their learning activities towards the estuary of assessment conducted by the teacher. The quality of learning achievement assessment instruments directly influences the accuracy of the achievement status of students' learning outcomes. Therefore the position of the instrument for evaluating learning outcomes is very strategic in the decision making of teachers and schools related to achievement, learning outcomes of students including high-level thinking skills.

Physics according to Permendiknas No. 22 of 2006 attachment 3, is one of the branches of science that underlies the development of advanced technology and the concept of living in harmony with nature. The rapid development in the field of information and communication technology today is triggered by findings in the field of material physics through the discovery of microelectronic devices that are able to load a lot of information with very small sizes. Physics is important to be taught as a subject at the high school/

Madrasa Aliyah level because Physics as a vehicle to foster the ability to think that is useful for solving problems in daily life and equip students the knowledge, understanding and a number of abilities required to enter the level of education that higher and develop science and technology. According to Chodijah et al., (2012) the purpose of learning physics is that students can understand, develop observations and carry out experiments related to natural phenomena involving substances (matter) and energy, so as to foster awareness and understanding of the greatness of Allah SWT the lord of the universe. While according to Yulianti *et al.*, (2015) learning physics is an active process, so students must be given the opportunity to explore understanding, develop thinking skills and science process skills including scientific inquiry.

Static fluid is one of the subjects in physics that is very related to daily life and is very factual which is certainly very interesting to learn and apply in everyday life. In general it is hoped that physics will no longer be feared by most students, but rather becomes a subject that is sought, liked, and mastered as one of the bases of support in the advancement of technology in the future. The assessment instrument is part of the assessment process in doctor and heller learning in Amalia & Endang, stating that assessment acts as a process assessment program, learning progress and student learning outcomes. Assessment instruments include tests and assessment systems. The assessment instrument is designed to determine the level of understanding of students after learning a competency (Prasasti dkk, 2012).

The results of interviews with physics teachers at MAN 1 Medan proved that the LOT (Low other thinking) assessment instrument used still measured aspects of memorization and understanding. Because according to Anderson and Krathwohl there are 2 categories, namely the ability to think at a low level (Low other thinking). The ability that includes LOT is the ability to remember, understand, and apply. A set of HOT (High other thinking) includes the ability to analyze, evaluate, and create. Based on this explanation, this research will focus more on the stages of analyzing,

evaluating, and creating. Furthermore, the researchers also conducted interviews or questions and answers with several students, they said that they lacked interest in learning physics because the teacher rarely used the media, the teacher only monotonously explained the material, took notes on the writing board and worked on the questions, and they had never fully practiced in the laboratory. It also has an impact on student learning outcomes such as the results of daily tests of students who, on average, have not been able to reach the KKM (Minimum Completeness Criteria) applied at school that is equal to 70. The results of interviews with physics teachers at a MAN 1 Medan prove that the assessment instruments it is used to measure memorization and understanding aspects only. The assessment instruments should include assessments that train students' critical thinking skills. Based on this, a research was developed to develop students' critical thinking skills assessment instruments on Static Fluid materials. In addition, this subject matter was selected based on the detailed indicators contained in the 2013 curriculum curriculum physics syllabus, namely Static Fluid material.

The assessment instrument developed in this study is an assessment instrument that can measure students' critical thinking skills. The results of this assessment are used to improve students' thinking skills. Students' thinking skills can be seen from the level of assessment instruments tested and the proportion of completeness. In addition, the critical thinking skills assessment instrument for static fluid material presented raised phenomena that occur in everyday life. Based on the problem above, the writer needs to conduct research on "The Development of instruments assessment critical thinking skills of high school students on the subject Static Fluid".

1.2 Identification of Problems

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

1. Development of instruments used in learning is still limited in the form of memorization and understanding;
2. Students' critical thinking skills are still relatively low;
3. The development of instruments must develop in accordance with the changing times and adjust the development of instruments that are appropriate to the material to be conveyed;
4. The number of students who feel less interested in learning physics because the teacher is only monotonous teaching physics material;
5. Static fluid subjects are considered difficult for students.

1.3 Problem Limitation

Based on the background and identification of the problem, this research is limited to:

1. The study participants were high school students in class XI in odd semester T.A 2019/2020;
2. The material under study is static fluid;
3. The type of instrument used is the instrument for evaluating students' critical thinking skills used in the form of subjective tests.

1.4 Problem Formulation

Based on the identification of the problem, the problem can be formulated as follows:

1. How is the development of instruments for evaluating critical thinking skills of high school students on static fluid material?
2. What is the form of critical thinking skills instrument that is relevant for Static Fluid material?
3. What are the characteristics of critical thinking instruments based on empirical data?

1.5 Research Objectives

Based on the problems that have been formulated, this assessment aims:

1. Know the process of developing a critical thinking skills assessment instrument
2. Acquire new innovative critical thinking skills assessment instrument that can measure students' critical thinking skills
3. Obtain critical thinking skills assessment instrument that can measure critical thinking skills that meet valid and reliable criteria.

1.6 Research Benefits

The expected benefits of the results of this study are:

1. For students

Can increase insight and knowledge in practicing skills as potential educators and can improve the skills of researchers in making various design techniques for developing students' critical thinking skills in the learning process.

2. For Teachers

Can be used as input for future learning activities. Can use good assessment instruments in learning physics to assess students' critical thinking skills in learning physics. This research can provide information that can guide teachers to use and develop their own evaluation instruments especially in learning physics of static fluid material.

3. For Students

Can help students in the learning process of physics especially in the material of static fluid, so that the development of instruments in the form of valid and reliable subjective tests can improve learning outcomes and students' critical thinking skills. All problems developed in this evaluation test are expected to be more motivating and challenging for students to improve their thinking skills.

4. For Schools

Providing new discourse to apply instruments that are more appropriate in the learning process and can use techniques for developing critical thinking skills assessment tools in the form of valid and reliable subjective test questions as an assessment tool to measure student understanding.

5. For Physics Education Study Programs

Can added questions that can be used as a standard test or question bank to be used as the development of assessment instruments specifically to measure the level of thinking skills of students in the form of subjective test questions that have been valid and reliable

1.7 Operational definitions

1. Critical thinking is the ability to think at a more complex level and uses the process of analysis and evaluation using indicators of critical thinking skills. (Ennis, 1985)
2. Diagnostic tests are tests that are used to reveal student weaknesses so that the results can be used as a basis for giving appropriate action or treatment and in accordance with student weaknesses (Depdiknas, 2007)
3. Two-Tier Multiple Choice is a diagnostic test in the form of a two-tiered multiple choice question that was first developed by David F. Treagust in 1988 (Septiana, et al., 2014).
4. An assessment instrument is a measuring instrument used to make decisions based on measurement results and predetermined criteria (Sudjana, 2014)
5. Critical thinking instrument is a tool used to measure the level of knowledge and understanding of students in learning physics in order to be able to compete and be able to keep up with the times and the technology that is developing at this time (Sukma Pradana, D.D Dkk, 2017)