

CHAPTER I

PRELIMINARY

1.1 Background of the Study

Education makes humans more advanced in their civilization and more civilized in their social lives. Civilized humans have a common sense about education, which has a very important role in this life. Education is the process of developing all aspects of human personality, including knowledge, attitudes, values, and skills. The purpose of national education, according to Pancasila and the 1945 Constitution, is to eradicate ignorance and educate the Indonesian people. Referring to the functions and objectives of education in Indonesia, listed in Chapter 2, article 3 of Law No. 20 of 2003 concerning the national education system, which reads as follows: "National Education serves to shape the character and civilization of a dignified nation and develop it in order to educate the nation's life, aims to develop the potential of students to become human beings who are devoted and faithful to God Almighty, healthy, knowledgeable, noble, creative, independent, capable, and give birth to democratic and responsible citizens."

According to Kemristekdikti (2018), the industrial revolution 4.0, also known as the "fourth world industrial revolution", is changing the world of education. Information technology has become an essential part of human life. In the 21st century, Indonesia must become stronger and more open. Education is one way to solve problems in the global era because education is expected to improve students' abilities; therefore, they can face and solve daily problems. Based on this definition, students are the ones who are required to have problem-solving skills. (Trianto, 2010)

Education is basically an interaction between teachers and students that occurs in a certain situation to gain knowledge, both at school and outside of school. Education does not only focus on providing subject matter but also on helping students discover and improve their own knowledge; therefore, they have

life skills that will help them solve problems in life. The philosophy of progressivism holds that knowledge that is true today may not be true in the future. Therefore, the best way to prepare students for an unknown future is to teach them problem-solving strategies that allow them to face new challenges and discover truths that are relevant today. (Putri et al., 2020)

Currently, Indonesia's educational system employs the 2013 Curriculum revision, which aims to develop high-level thinking skills in students. These skills involve more than just memorization and communication of previously learned material; they also involve the ability to connect, manipulate, and transform prior knowledge and experience into creative thinking that can be applied to problem-solving and decision-making in novel contexts. Students will become used to evaluating, reasoning, and coming up with original solutions to issues that arise in daily life as a result of applying higher-order thinking skills to their education. Successful application of these skills results in valid explanations, decisions, performances, and products in the context of existing knowledge and experience and encourages continuous growth in intellectual and other skills. (Sihaloho et al., 2017)

The learning process at school should be interactive, inspiring, fun, and challenging. Permendikbud No. 65 of 2013 states that this should provide medium opportunities for creativity and independence in accordance with the talents, interests, and physical and psychological development of students (Yulianawati et al, 2016). The current 2013 curriculum emphasizes personal experience by seeing, asking, and reasoning with the aim of enhancing students' creativity for the 21st century. Thus, lessons should provide students with opportunities to seek, process, create, and use their knowledge in the cognitive process. The implementation of the learning process stipulated in Permendikbud No. 65 of 2013 has not been fully implemented in some schools.

Based on the results of interviews conducted with chemistry teachers at SMA Swasta Pertiwi Medan, the problems that students often face are that they tend to find it difficult to solve problems because they are required to think critically and systematically to solve them. In addition, students only memorize the concept of colloidal systems and do not understand the concept of material,

and their' analytical skills are still weak. The difficulty in understanding the concept of material and its application in everyday life is due to the less than optimal thinking ability of students to construct the concept of colloidal systems while learning; therefore, it is easy to forget the concept of material. Students are less able to connect the concept of colloidal systems with daily life events. Then there was the lack of student understanding of the problems given and the lack of student independence in planning and problem solving. This causes low student learning outcomes; Therefore, there are still 55% - 60% of students whose scores are below the Minimum Requirement Criteria (KKM) with scores below 75.

Learning in the context of education process standards is not only defined as the process of delivering subject matter but also as the process of organizing the environment so that students learn. Learning that positions the active role of students as learning subjects can be used to reduce teacher dominance in the implementation of learning. The process of teaching students and learning theory are the main determinants of educational success. Chemistry learning essentially has the same meaning as other subjects, but because the science taught in chemistry subjects is part of the natural science taught in junior and senior high schools (SMA), chemistry is taught in more detail in high school because it is tailored to the understanding of students.

Based on the results of research interviews conducted by Dewi Yahyawati (2013), it was stated that students' problem-solving skills are still low. It can be seen from the results of solving problems that students do, especially in the form of story problems. Many students are unable to solve problems, which start with understanding the problem, planning problem solving, and others. Therefore, it is necessary to consider chemical tasks and a supportive learning atmosphere so that students' mathematical problem-solving skills can emerge in learning. Afifah (2016) revealed that the learning model used in the learning process plays an important role in students' problem-solving abilities. Students' low problem-solving ability shows that something is still not optimal in the chemistry learning process. In general, students only accept the learning delivered by the teacher without seeking further information, therefore making them passive in the

learning process. Things like this can result in students' problem-solving skills not being able to develop properly. (Masri Singarimbun, 2011)

Problem solving is defined as a way of thinking that leads to an answer to a problem that involves forming and selecting existing concepts and providing new alternatives (Priansa, 2019). Meanwhile, problem solving ability is one of the important parts in the education curriculum, because in the learning and completion process students are able to gain knowledge and use the knowledge they already have to be used in problem solving. Problem solving ability is the main goal among several objectives of learning chemistry. In chemistry learning, chemical tasks and learning atmosphere need to be considered so that students' ability to solve problems can emerge. In learning chemistry, students should be accustomed to gaining understanding through experience and knowledge that is developed in accordance with the development of their thinking. In this case, we realize that there are still many chemistry teachers who think that students are the object of learning, therefore, learning is teacher-centered and focused on achieving the target material according to the textbook, and not on students' understanding of the material. Therefore, many students just go through learning by memorizing concepts and not understanding the meaning of the content of the material. Students should be actively involved and the teacher should no longer dominate the learning, hence, student-centered learning.

A colloidal system is a subject matter that is close to life. In everyday life, colloidal systems are definitely found. In a healthy and perfect diet, you will find colloidal systems, for example, in the rice you eat and the milk you drink. When eating, we use a stainless steel spoon. A stainless spoon is a colloidal system. When washing dirty glasses, plates, and spoons, we also use a colloidal system to clean them, namely soap. And there are many more colloidal systems that are around that are rarely realized. The basic competencies that students must master on the subject matter of colloidal systems include: (1) classifying colloidal systems based on observations and their use in industry; (2) identifying the properties of colloids and their markers in everyday life; and (3) making various colloidal systems with materials around them. In accordance with these basic competencies, the learning process on the subject matter of colloidal systems

should use approaches and methods that can activate students. Students will learn well if they are actively involved in all activities in class and have the opportunity to discover their own concepts. Therefore, to achieve the basic competencies above and to increase students' activity and mastery of concepts in the main material of colloid systems, it is necessary to improve the learning process. Therefore, it is necessary to apply a learning model that can facilitate students' problem-solving abilities in colloid system material, namely by using the contextual learning model.

Based on the background description above, researchers are interested in conducting research entitled "Analysis Of Students Problem Solving Abilities Taught Using The Contextual Learning Model On Colloid System Material In Xi Class At Smas Pertiwi Medan".

1.2 Problem Identification

Based on the description of the background of the problem above, the problem identification that can be identified include:

1. Students still find it difficult to understand the concept of colloidal system material; therefore, the problem solving abilities of SMA Swasta Pertiwi Medan's students are still low.
2. Students are less able to relate the chemical concepts of colloidal system materials to everyday life.
3. SMA Swasta Pertiwi Medan's students are passive in the chemistry learning process.
4. SMA Swasta Pertiwi Medan's teachers have never applied the Contextual Learning model to chemistry lessons.

1.3 Scope of Study

The scope of study from this research is a type of qualitative research with a descriptive approach. According to Suwarsono in (Ningrum, 2020) qualitative

research is a way of knowing something where a researcher collects, organizes, and interprets information obtained from humans using the eyes or ears as filters. Then Din (2016) revealed that the purpose of the descriptive approach is to create a picture or description of a variable, symptom, or situation. This study describes the events that are the center of attention (problem-solving ability) qualitatively and based on qualitative data. This research aims to describe students' problem-solving skills through the application of contextual teaching and learning (CTL) type cooperative learning. The data generated will be in the form of the results of solving problems with Polya; therefore, the objectives of this study will be achieved.

1.4 Scope of Problems

Based on the background and problem identification above, the scope of problems in this study are:

1. Students' problem solving skills are still low and can be measured using Polya's problem solving skills test.
2. The material taught in this study is colloidal system material.
3. The research subjects were students of SMA Swasta Pertiwi Medan class XI.

1.5 Research Questions

Based on the scope of problems above, the Research Questions in this study are:

1. How is the problem solving ability of class XI students of SMA Swasta Pertiwi Medan on Colloidal System material after being taught using the Contextual Learning model?
2. What difficulties are experienced by students of class XI SMA Swasta Pertiwi Medan in solving problem solving test questions on Colloidal System material after being taught using the Contextual Learning model?

1.6 Study Objective

Based on the research questions above, the researchers explained that the objectives of the study were:

1. To analyze the problem solving ability of students in class XI of SMA Swasta Pertiwi Medan on Colloidal System material after being taught using the Contextual Learning model.
2. To analyze the difficulties experienced by students of class XI SMA Swasta Pertiwi Medan in solving problem solving test questions on Colloidal System material after being taught using the Contextual Learning learning method.

1.7 Research Purposes

The benefits expected after doing this research are:

1. For teachers, it can broaden their knowledge about the Contextual Learning model by helping students improve problem solving skills.
2. For students, this Contextual Learning model can help them improve problem solving skills.
3. For schools, as a consideration in developing and improving learning programs at school.
4. For researchers, as information as well as guidance material for researchers in carrying out teaching duties as prospective teaching staff in the future. as information material for readers or other researchers who want to conduct similar research.