

CHAPTER I

PRELIMINARY

1.1 BACKGROUND

Education is a process of learning knowledge, skills, and habits of a group of people that are passed on from one generation to the next through teaching, training, and research. Learning is essentially a process of interaction between learners and learning resources. Thus, the role of a teacher is needed to develop the potential and abilities of each student. In accordance with the statement of Slmeto that "A teacher must be able to generate an individualized spirit of learning", by giving students the freedom to develop the ability to think innovatively and creatively in learning (Rahman, 2022).

Recently, the quality of education has become a serious agenda for discussion, both among education practitioners, politicians, the public and those who make policies. The quality of national education was considered by many to not have adequate quality when compared to the quality of education in neighboring countries. The quality of our education was getting worse when compared to other large countries. Whereas education was an important variable in the intelligence of the nation (Jasnawi, 2019).

According to the Political and Economical Risk Consultant (PERC) survey, the quality of education in Indonesia ranks 12th out of 12 countries in Asia. Indonesia's position was below Vietnam. Data reported by The World Economic Forum Sweden (2000), Indonesia has low competitiveness, which only ranks 37th out of 57 countries surveyed in the world. And still according to the survey of the same institution in Indonesia only predicate as a follower not as a leader of technology from 53 countries in the world. Entering the 21st century, the world of education in Indonesia became excited. The excitement was not caused by the great quality of national education but more due to awareness of the dangers of underdevelopment of education in Indonesia (Agustang, et al., 2022).

Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 3 of 2020 concerning National Higher Education Standards in article 11 paragraph 1, "The characteristics of the learning process are at least

interactive, holistic, integrative, scientific, contextual, thematic, effective, collaborative, and human-centered". Based on this, graduate learning outcomes are achieved through a learning process that prioritizes the development of creativity, capacity, personality, and student needs, and develops independence in seeking and discovering knowledge. These characteristics are centered on students and lecturers.

Based on observations on 2nd November, 2023 at SMAN 11 Medan with a chemistry teacher, it was known that chemistry was a subject that considered difficult to understand, so students were less interested in learning it, which is contained in appendix 5. This is related to the characteristics of abstract science concepts that made chemistry difficult to learn. One of the chemistry materials that considered difficult to learn is buffer solution material. The results of observations or observations and interviews with teachers and students showed that the learning approach used tended to be teacher centered approach. The chemistry learning process tended to be monotonous and less interesting. Students only received an explanation of the material and then did the question. Therefore, the value of chemistry subjects had not reached the optimal level.

The learning process involving teachers and students would not be separated from taught materials, even though the teacher could explain the material clearly and completely, the need for taught materials remained a priority. The quality of learning was low when educators were only fixated on conventional teaching materials, without any creativity to develop these teaching materials innovatively (Munna, 2021).

One of the efforts found to be made to improve the quality of education is to develop teaching materials into various forms of teaching materials. Teaching materials have many varieties and forms. To develop teaching materials, teachers are required to constantly improve their abilities. If you do not have the ability to develop varied teaching materials, the teacher will be trapped in a monotonous learning situation and tend to be boring for students (Hamdani, 2011), teaching materials should be able to qualify as learning materials because many teaching materials used in learning activities, generally tend to contain only subject

information and are not well organized (Pratiwi, 2021). One of the easiest teaching materials for teachers to make is modules because they do not require expensive tools and high skills. Modules are one of the various forms of printed teaching materials. Printed teaching materials can be in the form of student worksheets (LKS), hand outs, leaflets, wilcharts, books, modules, brochures, and others (Hamdani, 2011).

Some research on student self-learning packages includes a series of learning experiences that are systematically planned and designed to help learners achieve learning objectives. According to Russel in Wena (2014), the module learning system will make learning more efficient, effective, and relevant. Modules are teaching materials that could be used as a means of student learning, because the modules are equipped with instructions for independent learning for students (Depdiknas, 2008). The role of the teacher in learning using modules is as a facilitator rather than dominating learning (Pratiwi, 2021).

In order to be more supportive in addition to innovative teaching materials, it is also important to use methods related to everyday life, namely contextual learning. According to contextual learning theory, learning only occurs when students process new information or knowledge in such a way that the information or knowledge was understood by them in their own frame of reference (memory, experience, and response). In contextual-based learning and approaches or known as CTL (Contextual Teaching and Learning), students are expected to learn through 'experiencing' not 'memorizing' (Hartono and Afni, 2020).

Based on research by Tukan, et al., (2021), that the implementation of teaching materials that have been standardized in learning shows that contextual-based teaching materials can help students to achieve competencies according to curriculum demands. Teaching materials are very effective in improving student learning outcomes in teaching buffer solution material, all indicators of contextual book teaching materials are well achieved. This was supported by data from the teaching material trial results which show that each indicator in each questionnaire reaches an interpretation value above 70%. Thus, contextual book

teaching materials on buffer solution materials can be used as a companion to learning media in class XI science high school chemistry subjects.

One of the obstacles to implementing this contextual learned strategy was the availability of teaching materials in the classroom. Based on the results of interviews with Chemistry subject teachers regarding the availability of teaching materials at school, it showed that most students in class XI IPA 1 SMANegeri 11 Medan did not had teaching materials for independent studied at home. This made it difficult for teachers to implement learned that involves students actively. The reality encountered in the field based on preliminary observations and interviews with chemistry teachers of SMA Negeri 11 Medan obtained the results that the chemistry learned outcomes of class XI students on buffer solution material still did not met the Minimum Completeness Criteria (KKM). This could have been seen from the average valued of the XI grade daily tested in the 2022/2023 period which was still low, where 50% was still remedial, which is contained in appendix 4.

According to some researched on contextual learned strategies, this learned strategy was effective for improved student learned activities and outcomes. Researched by Utami and Fajar Nur aktorika Dwi Saputri (2014) provided results that the increased in student learned activities through a contextual approached indicated by the percentage of Visual Activities aspects of 85.00% (very active) and an increased in student learning outcomes could have been seen from the effect size valued of d cohen of 0.9 with a large effect category. In addition, research by Elvinawati (2012) showed that the application of Contextual Taught and Learned (CTL) which requires active involvement of students in built and made links between the concepts learned could improved student mastery of the subject matter.

Contextual learning was a teaching and learning concept that helped teachers link the teaching material in the classroom with real world situations and encouraged students to made connections between their knowledge and its application in their lived as individuals, family and community members. Contextual learning helped students found creative ideas in the learned process

through discovery, reinforcement, and connection in the real world that was directly experienced by students, students would work hard to achieve their learning goals by using previous experiences and knowledge to build new knowledge, then students reuse their understanding and abilities in contexts outside of learning so that students would easily understand and remember what they learn. Applying the principles of contextual learning is expected to make learning more meaningful for students, because students will work scientifically and experience themselves not just transferring teacher knowledge to students (Muhartini, 2023).

Based on this background description, the researcher was interested in conducting research with the title **“Development of Contextual-Based Chemistry Teaching Materials on The Subject of Buffer Solution In Senior High School”**.

1.2 PROBLEM IDENTIFICATION

Based on the background above, several problems could have been identified which were used as references in the research as follows:

- 1) The chemistry learning process was still done in a monotonous way.
- 2) Teaching materials used in learning activities, generally tended to contain only subject information and were not well organized.
- 3) The implementation of learning so far tended to be teacher centered and there are not many learning resources that could increase student motivation.

1.3 SCOPE OF STUDY

Based on the above background, the scope of the problem in this study was the development of contextual-based teaching materials for teaching buffer solution materials that meet the standards to be used in teaching at school.

1.4 PROBLEM LIMITATION

So that the researcher did not deviate from the researched objectives, the problem is limited as follows:

- 1) The material developed was a buffer solution.

- 2) Development of high school chemistry teaching materials on contextual-based buffer solution materials that are standardized followed BSNP criteria.
- 3) Analysis of buffer solution material presented in chemistry teaching materials from chemistry books circulating in schools was adjusted to the standard high school chemistry syllabus.
- 4) The development of contextual-based teaching materials was validated by respondents which include 1 lecturers and 1 high school chemistry teachers.
- 5) Trial of teaching materials to schools that became researched sites.

1.5 PROBLEM FORMULATION

Based on the background above and the problems that arise, the problem formulations in this study was:

- 1) Does the contextual-based Chemistry teaching material that has been developed on buffer solution material meet the BSNP standard eligibility criteria?
- 2) How is the validity of lecturers and teachers regarding contextual-based chemistry teaching materials on buffer solution materials that have been developed?
- 3) Can the teaching materials that have been developed improve student learning outcomes on buffer solution material?

1.6 RESEARCH OBJECTIVES

The general purpose of this research is to develop teaching materials on teaching buffer solutions through contextual learning to create creative, effective, and enjoyable learning, and help students obtain optimal learning outcomes. While the specific objectives in this study was:

- 1) To develop contextual-based Chemistry teaching materials that have been developed on buffer solution materials that meet the standards of content feasibility, language feasibility, presentation feasibility, and graphic feasibility according to BSNP.
- 2) To find out the responses of lecturers and teachers regarding contextual-based chemistry teaching materials on buffer solution materials that have been developed.

- 3) To determine the learning outcomes of students who use contextual-based teaching materials that have been developed.

1.7 RESEARCH BENEFITS

This research is expected to provide the following benefits:

1) Academis Benefits

This research is useful to increase knowledge about the development of contextual-based chemistry teaching materials that can be used as an alternative learning resource in the classroom and outside the classroom.

2) Practical Benefits

- a) For Schools : The results of this study are expected to provide a good contribution to the school so that it can improve the quality of the learning process in particular and the quality of the school in general.
- b) For Teachers : As an alternative source in delivering buffer solution material to students.
- c) For Students : As a source of knowledge that can help increase student independence and skills.
- d) For Researchers : Adding insight, experience in developing high school chemistry teaching materials on contextual-based buffer solution materials.
- e) For Further Researchers : As a study material and literature study for the development of contextual-based teaching materials.