

CHAPTER I

INTRODUCTION

1.1 Background

Education can be defined as a conscious effort that is deliberate, planned, patterned, and can be evaluated, which is given to students by educators in order to achieve optimal abilities. Education basically aims to grow and develop the innate potentials that exist in students. Education is the most influential aspect in efforts to form a nation that is ready to face problems in the era of globalization (Supardi, 2012). However, the quality of education in Indonesia is still in the low category. This is proven by the data from the Ministry of Education and Culture which shows that for the time being for PISA 2015, Indonesia gets an average score of 403 for science (third from bottom), 397 for reading (last rank), and 386 for math (second from bottom) out of 72. countries that follow (Source: OECD, PISA 2015 Database) (Setiawati et al, 2018).

One of the problems that solve the problems of our education world is the problem of the weak learning process, where in the learning process children are less likely to develop the ability to connect between what they have created and the world they live in. The learning process in the classroom is directed at the child's ability to memorize information, the child's brain is forced to remember and accumulate various memorized information to connect it with everyday life. As a result, children are smart theoretically, but are poor in application (Suyanti, 2010). Most students in school cannot make a connection between what they do and how this knowledge will be applied. Students also understand the understanding of academic concepts (such as mathematical concepts) when they are taught using traditional methods, even though they really need to understand the concepts when they relate to the world of work in which they live (Trianto, 2009).

Chemistry is generally a difficult subject for most students because it is related to the structure of the material. Chemistry learning which in the process is less related to everyday life can also result in the learning becoming less meaningful for students. Chemistry teachers should take advantage of the importance of chemistry in everyday life to engage their students, and then follow up with opportunities for them to actively explore newly introduced concepts.

Quality of education will be good if the teaching and learning process goes well (Rofiah, 2018). One of the factors that influence the teaching and learning process is the condition of the teaching materials. The material presented tends to be less related to daily life so that the learning experience of students is small. Learning innovation efforts that can be done are by compiling contextual-based teaching materials. This will help students develop problem-solving, critical thinking and creative thinking skills so that learning outcomes increase. Contextual-based learning is used because of the fact that most students have not been able to connect what they learn with how it benefits in real life. Contextual-based learning is expected to encourage students to connect their knowledge with its application in everyday life. With this, students can more easily understand the subject matter (Andriani et.al, 2019).

However, contextual learning makes it difficult for students to follow lessons if they do not have the same knowledge and experience as other students. This is what makes independent teaching materials needed for students. Teaching materials can improve chemistry teaching and learning activities, make students learn chemistry easily, efficiently and be student-centered so that there is a shift in learning from teacher center learning to student center learning. Innovative and interactive teaching materials can increase student motivation to learn independently (Situmorang et al., 2015).

One of the teaching materials that can be used independently by students is a module. The advantages of modules as teaching materials include that they can be studied in various places, independently or not in groups, and can be studied flexibly. The results showed that the number of students whose score was ≥ 70 was represented by the use of modules as teaching materials that could support learning outcomes by 94.8% (Suryani et al, 2014).

The results of the questionnaire analysis conducted by Paristowati et al. (2017) provide information that 87% of students have difficulty understanding acid-base material and as many as 83% feel unmotivated by acid-base learning. Based on the results of the questionnaire that has been distributed by researcher at SMA Negeri 4 Pematangsiantar, it is known that as many as 71.42% of students are interested in chemistry lessons and 77.14 students are interested in acid-base materials. However, in learning activities in the classroom, as many as 85.71% of students said that the teacher did not relate the material taught to everyday life, and also 62.85% of students said that the textbooks used in schools were far from everyday life. This makes about 74.28% of students say they have difficulty in following chemistry learning, especially on acid-base material.

Acid-base materials are very complex materials in terms of their characteristics. The characteristics of acid-base material consist of three aspects, namely macroscopic, which is the material studied in macro form which can be seen from the naked eye such as using litmus paper to distinguish the acid-base properties of a solution. Microscopic is a chemical phenomenon that is real but cannot be seen with the naked eye, while symbolic is in the form of symbols, names of acid-base compounds in chemistry or calculations such as acidic and alkaline pH.

All teachers experience the problem of insufficient time availability to deliver acid-base material optimally, so they need learning media that can be accessed more easily for students to learn independently (Rahman and Atun, 2016). As many as 87% of students wanted interesting and creative learning media for acid-base material and as many as 90% of students stated that acid-base learning material should be linked to everyday life (Paristowati et al, 2017). Most of the chemical materials can be associated with conditions or problems that exist in everyday life, such as on the topic of acid-base; for example, the sour taste of fruits, the use of alkaline compounds in treating stomach ulcers, the use of lime to neutralize acidic agricultural soils, and so on. However, what has happened so far is that the acid-base topic in chemistry learning in high school is more conditioned to be memorized by students, as a result students have difficulty relating it to what

is happening in the environment, and do not feel the benefits of learning acid-base so that students' understanding of concepts is low (Setiawan & Sriwijaya, 2011).

Based on the analysis of acid-base material is closely related to everyday life, while the characteristics of contextual learning are related to everyday life so that the acid-base material and the contextual learning model have a good match in terms of developing student understanding. In this connection, the researchers hope to be able to produce products in the form of quality module teaching materials according to quality criteria and standards that can help students understand and master chemistry lessons and can improve students learning outcomes (Andriani et al, 2019).

The 2013 curriculum used in Indonesia currently uses international standard assessments. The assessment is intended to help students improve their high-order thinking skills or what is known as HOTS (High Order Thinking Skill) (BSNP, 2018). HOTS is a thinking skill that not only requires memory skills, but requires other higher skills such as critical and creative thinking (Wardany et al, 2015). If learning in schools does not equip students to be able to think at high levels, it will produce graduates who are not ready to solve various problems in the real world (Sani, 2019). Data in the field shows the results of the 2018 National Examination, that students are still weak in higher order thinking skills such as reasoning, analyzing, and evaluating. This is because the evaluation questions given by the teacher have not been able to develop students' thinking patterns in accordance with the demands of the 2013 curriculum.

In accordance with Law No. 20 of 2003 National Education aims to develop the potential of students to become human beings who believe and fear God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent and become democratic and responsible citizens. To achieve the goals of national education, education in schools has a very important role in the effort to develop the character of students to become someone with noble character (Marpaung, 2016). Therefore, teaching materials must be equipped with character values that support the achievement of national education goals.

Based on this description, the researcher was interested in conducting a research and development with the title: "***Development of Contextual Teaching***

Materials Based on HOTS Evaluation to Improve Learning Outcomes and Student Character Values in Acid Base Materials".

1.2 Problem Identification

Based on the background of the problems that have been stated above, problems can be identified as follows:

1. Students feel that acid-base material is difficult and very complex in terms of its characteristics, causing student learning outcomes to be low
2. The topic of acid-base in chemistry learning in high school is more conditioned for students to memorize, as a result students have difficulty relating it to what is happening in the environment.
3. The evaluation questions given by the teacher have not been able to develop students' thinking patterns in accordance with the demands of the 2013 curriculum

1.3 Problem Formulation

Based on the background that has been described, the formulation of the problem is described as follows:

1. How is the feasibility of the teaching materials that used today based on BSNP?
2. How is the feasibility of teaching materials that have been developed based on BSNP?
3. Is the student's learning outcome using contextual teaching materials on acid-base materials higher than student's learning outcome using textbooks provided at school?
4. Is the student's character value after using contextual teaching materials on acid-base material higher than the student's character value before using contextual teaching materials on acid-base material?
5. Is there a correlation between student learning outcomes and character value on acid-base material through the teaching materials developed?

1.4 Problem Limitation

To provide a clear scope for the discussion, it is necessary to define the problem in this study as follows:

1. Develop contextual teaching materials in accordance with the learning objectives
2. Compilation of teaching materials that will be developed from at least 3 of chemistry books
3. The character values developed in this teaching material are: 1) curious and 2) independent
4. Acid base teaching materials developed will be assessed by 2 chemistry lecturer and 1 chemistry subject teacher until chemistry teaching materials are obtained according to BSNP standards

1.5 Research Objectives

The general objectives of this research are:

1. To find out the feasibility of the teaching materials that used today based on BSNP
2. To find out the feasibility of teaching materials that have been developed based on the BSNP
3. To find out whether student's learning outcomes using contextual teaching materials on acid-base materials are higher than student learning outcomes using textbooks provided at school
4. To find out whether the student's character value after using contextual teaching materials on acid-base material is higher than the student's character value before using contextual teaching materials on acid-base materials
5. To find out the correlation between student learning outcomes and character value in acid base material through the teaching materials that have been developed

1.6 Research Benefit

The benefits expected in this study are as follows:

1. For Researchers
Increase the knowledge and experience of researchers to analyze books and develop contextual teaching materials on acid-base materials
2. For Teachers
Provide information and input about chemical teaching materials on acid base materials
3. For Students
As a source of learning reference for students, so as to improve student learning outcomes.
4. For Further Researchers
As input for improving the quality of the learning process, especially the chemistry learning process

1.7 Operational Definition

Based on the previous explanation, the operational definition in this study is as follows:

1. The development of teaching materials aims to create teaching materials that can support the achievement of core competencies, basic competencies, indicators, learning outcomes achievement, and meet the quality standard criteria.
2. Contextual-based teaching materials can encourage students to connect their knowledge with its application in everyday life.
3. Learning Outcomes are written statements regarding the success of students or students who are expected to be able to achieve the ultimate goal of qualifying the learning process.
4. Teaching materials must be equipped with character values that nurture the character of students to become someone with noble character in order to support the achievement of the goals of national education.

5. HOTS (High Order Thinking Skills) is a thinking ability that is tested at a higher level, namely not only testing on the memory or memorization aspects, but testing up to the aspects of analysis, synthesis, and evaluation.



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