

The Effect of Chemical Compound Names Module Based on Scientific Approach with Probing Prompting Technique on Learning Outcomes of Grade X Students of SMAN 1 Pancung Soal

Charles Zulnata*, Ellizar, Budhi Oktavia, Alizar, Tiara Viodelf

Masters in Chemical Education, Faculty of Mathematics and Natural Sciences
Padang State University



Abstract - This study aims to discuss a module on chemical comparison procedures based on science with techniques that investigate the learning outcomes of class X students of SMAN 1 Pancung Soal academic year 2018/2019. The research design used was the *Non Equivalent Control Group Posttest Only Design* taken using *Cluster Cluster sampling*. The study sample consisted of two classes namely the experimental class and the control class. The research instrument used was a test of learning multiple choice questions. Based on data analysis that can be produced by experimental class using scientific equation naming module based on scientific research with promising investigating techniques, the average value of learning outcomes is 86,21 and the control class without using modules with an average learning outcome value of 80, 53 After the t-test at the 0.05 level was obtained by Asymp. Sig of 0.092. When the significance value > 0.05 is then accept H₀ and vice versa. Decision to reject H₀ means learning outcomes of students who learn to use modules and without modules differ significantly. The average learning outcomes of students who use modules are higher than students who do not use modules in the nomenclature material for chemical composition of class X students of SMAN 1 Pancung Soal.

Keywords - Compound Names, Scientific Approaches, *Probing prompting* Techniques.

I. INTRODUCTION

The nomenclature of chemical compounds is one of the subjects that must be studied in class X SMA / MA. This material learns about the nomenclature of simple inorganic and organic compounds. To understand how to name chemical compounds students must do a lot of exercises to make it easier for students to understand the concepts and procedures for naming chemical compounds.

The 2013 curriculum recommends learning process based on the scientific approach. The learning process is carried out to build knowledge, skills and attitudes. The scientific approach is the organization of learning experiences in a logical sequence through the 5M learning

process that is observing, asking, gathering information, associating, and communicating [3]. In doing these five things it is expected that students can be active and think critically in the learning process. Therefore, to support the implementation of the 2013 curriculum, a learning technique is needed that can encourage students to think, so students are more active in the learning process. Curiosity of students can be developed through questions given to students [1].

This is in accordance with the opinion Nasution (2010: 161) that the question is a stimulus that encourages students to think and learn. In learning there are two questioning techniques that help increase the activeness of students,

namely questioning techniques that are probing and guiding questions (prompting) [2].

The probing-prompting learning technique is learning that can develop and improve students' critical thinking skills, because students are directly involved in the learning process. Students are also required to have critical thinking skills. To improve students' thinking skills, students must be trained to think through questions. These questions can be either digging questions or guiding questions. So that students are able to actively think in finding answers to the questions asked.

Learning critical thinking is important because through critical thinking, students will be trained to observe the situation, raise questions, form hypotheses, make observations, and collect data, then give conclusions. The school learning process is expected to also train students to think critically. Several studies have been carried out stating that students' thinking skills can be improved through learning activities specifically designed to develop critical thinking skills.

From the results of interviewing the author with several chemistry teachers and the results of questionnaires given to students in Pesisir Selatan High School, information was obtained that most students still had difficulty in determining the names of simple inorganic and organic compounds. In addition, the teaching materials used in the nomenclature of chemical compounds are textbooks, worksheets and powerpoints. Teaching materials in the form of modules are not yet available at school. Teaching materials available in schools have not been able to make students learn independently and probing prompting techniques in learning are still rarely used. In the 2013 curriculum it is expected that students can learn with scientific and independent processes. In addition, the use of textbooks makes students only learn depending on the presence of the teacher and unable to learn independently, so that the use of teaching materials is needed which can make students active and able to learn independently. One teaching material that can be used is a module.

Esearch conducted by Buana Lindra (2017) about "The application of prompting probing learning models to students' VIII SMP problem solving ability". The results of the study of the average value of the experimental class using the prompting probing learning model were 8,6 better than the control class without using the prompting probing learning method with an average value of 7,9.

He research that will be conducted is relevant to the research that has been conducted by Utami (2016) on "Application of Prompting Probing Learning Models in Learning to Extract Negotiating Texts in Class X High School / MA Students". The results showed there was an increase in the average value of the experimental class, where previously the average value of the experimental class was 37 with the highest score was 53 and the lowest value was 20, increasing to 75 for the average value with the highest score of 93 and the lowest 67. This shows that the probing-prompting learning model is effectively used.

The purpose of this study was to reveal the effect of the nomenclature module on chemical compounds based on the scientific approach and the prompting probing technique on the learning outcomes of class X SMAN 1 pancung Soal.

II. METHODOLOGY

The research design used was a study of "Non Equivalent Control Group Posttest Only Design". This design can be described as follows [5].

Table 1. Design Implementation Test Field

Class	Treatment	Final Test
Eksperiment	X	T
cControl	Y	T

Information:

X: Learning with modules

Y: Learning without modules

T: Final Test

Pulation in this study was students of class X of SMAN 1 PancungSoal consists of X MIPA 1-5 enrolled in the academic year 2018/2019. The sample is part of the population studied [5].

The research instrument used was in the form of a learning outcome test held in writing in the form of multiple choice questions with five answer choices. Tests are given in accordance with the material given in the learning process. Before the final test to the two sample classes, a problem test was carried out to students who had learned about the theory of acid base, from the test results the test questions were analyzed first, which was seen from the validity, reliability, degree of difficulty, and power difference. The purpose of the test problem test is to see whether the question is feasible given to the two sample classes, after 20 questions were taken for the final test of the 30 test questions.

The analysis of the research data was conducted aimed at testing the correctness of the hypothesis proposed in the study. To analyze the correctness of the results of the research data, the hypothesis test was used, namely by testing the average similarity with the one-party test, the right side. Previously, the normality test and homogeneity test were first carried out. The results of the normality and homogeneity test from the results of the final test found that the two sample classes were normally distributed and had homogeneous variances. Data analysis was done by t-test.

III. RESULT AND DISCUSSION

Effectiveness module in terms of learning outcomes seen by comparing the results of the experimental class learning to learn by using the control class module that does not use the module.

Table 2. Sample Class Learning Outcomes

Class	N	Mean	S
Eksperiment	33	86,21	10,08
control	34	80,53	11,519

To determine the effect of the use of modules on student learning outcomes hypothesis test. Before the hypothesis test, normality and homogeneity tests were conducted on the sample class from the test results of the learning outcomes that had been obtained. The results of the normality and homogeneity tests of sample classes in Tables 3 and 4.

Table 3. Test for normality

Class	Control	Eksperiment
Asymp. Sig. (2-tailed)	.167 ^c	.091 ^c
Distibusi	Normal	Normal

Table 4. Homogeneity Test

Class	Sig.	Distribution
Eksperiment	0,092	Homogen
Control		homogen

Based on Tables 3 and 4, the learning outcomes of the experimental class and the control class in both schools are normally distributed and have homogeneous variances, where the significance value is > 0.05 , so the t test is performed. The results of hypothesis testing can be seen in Table 5.

Table 5. Hypothesis Test Results for Sample Classes

Class	Mean	Asymp. Sig	Decision
Eksperiment	86,21	0,036	Tolak H0
Control	80,53		

If the significance value is > 0.05 then accept H0 and vice versa. Decision to reject H0 means learning outcomes of students who learn by using modules and without modules differ significantly. The average learning outcomes of students using modules are higher than students who do not use the module.

Effectiveness is assessed based on the results of using the product as desired [8]. If the module is operationally results as expected, the module is said to be effective [7]. In this study, the effectiveness of the module nomenclature of chemical compounds based on scientific approaches is seen from student learning outcomes (cognitive aspects), and students' critical thinking skills.

The results of hypothesis testing indicate that student learning outcomes using the chemical compound nomenclature module based on the scientific approach with prompting probing techniques are significantly higher than the learning outcomes of students who do not use the module.

IV. CONCLUSION

Based on the results of the research and analysis of the data that has been implemented, it can be seen that the learning outcomes of students using the chemical compound nomenclature module based on the scientific approach with prompting probing techniques are significantly higher than the student learning outcomes without using the module of class X SMAN 1 Pancung Soal. It can be concluded that the use of the chemical compound nomenclature module based on the scientific approach with the prompting probing technique influences the learning outcomes of class X SMAN 1 Pancung Soal.

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