APPLICATION OF INQUIRY LEARNING MODEL BASED CONTEXTUAL TO REHEARSE STUDENT'S SCIENCE PROCESS SKILLS IN REACTION RATE MATERIAL

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Abstrak

Penelitian ini bertujuan untuk mengetahui kualitas pengelolaan pembelajaran guru dan keterampilan proses sains siswa setelah diterapkan model pembelajaran inkuiri berbasis kontekstual. Jenis keterampilan proses sains yang menjadi fokus dalam penelitian ini adalah keterampilan membuat hipotesis, mengenali variabel, serta mengumpulkan dan mengolah data. Penelitian ini adalah penelitian deskriptif kuantitatif dengan dengan desain penelitian *one group pretest-posttest*. Sasaran penelitian ini adalah keterampilan proses sains siswa SMAN 16 Surabaya kelas XI MIA-7 tahun ajaran 2014-2015. Instrumen yang digunakan untuk menilai kualitas pengelolaan pembelajaran yakni lembar pengamatan pengelolaan pembelajaran, dan instrument yang digunakan untuk menilai keterampilan proses sains siswa yakni lembar tes keterampilan proses sains. Hasil penelitian menunjukkan bahwa kualitas pengelolaan pembelajaran guru yaitu 88,33% (kategori: sangat baik) pada pertemuan 1 dan 90,87% (kategori: sangat baik) pada pertemuan 2. Pembelajaran berhasil melatihkan keterampilan proses sains pada siswa dengan skor keterampilan membuat hipotesis, mengenali variabel, serta mengumpulkan dan mengolah data siswa setelah penerapan model inkuiri berbasis kontekstual berturut-turut 74,75; 66,67; dan 78,79 dalam kategori baik.

Kata kunci: Keterampilan Proses Sains, Inkuiri Berbasis Kontekstual.

Abstract

The aims of this research are to know the teacher's classroom management and the student's science process skills after application of inquiry learning model based contextual. The science process skills type that were the focus of this research are hypothesis making, variables identifying, as well as data collecting and processing. This was a descriptive quantitative research with one group pretest-posttest design. The target of this research was science process skill of SMAN 16 Surabaya class XI MIA-7 in 2014-2015 school year students. The instrument that was used to assess teacher's classroom management quality is classroom management observation sheet and the instrument that was used to assess the student's science process skills is science process skills test sheet. The results showed that the teacher's classroom management quality at meeting 1 is 88,33 % (category: very good) and 90,87% (category: very good) at meeting 2. The learning successful rehearsed student's science process skills which score of hypotheses making skills, variables identifying skill, as well as data collecting and processing skill after implementation of inquiry model based contextual respectively 74,75; 66,67; and 78,79 in good category.

***Key words:** Science Process Skills, Inquiry-Based Contextual*

INTRODUCTION

Constitution of Republic Indonesia 1945 mandates the government shall manage and organize a national education system that increase the faith and devotion to God Almighty and noble character in order to educate the life of nation [1].

Chemistry is one of the proclivity subjects in Mathematics and Natural Sciences which in learning process is not only to understand the concepts, principles, laws and theories but also its relevance and application to solve problems in daily life [2].

Science process skill is a way to discover and develop facts, concepts and principles of science for students. Facts, concepts and principles of science will support the ability of students' science process skills [3]. Based on preliminary research to students class XI, it was known that the science process skill score of student especially the score of hypothesis making skill is 48,57 (category: enough), variables identifying skill is 49,52 (category: enough), as well as data collecting and processing skills is 36,19 (category: less). And the results from class XII, the scores of hypothesis making skill is 52,38 (category: enough), variables identifying skill is 40 (categories: less), as well as data collecting and processing skill is 60 (category: enough) [4].

The achievement of science process skills can be optimized when it's based contextual. Contextual is a learning concept that helps teachers to link the material that is taught and the real life situations of students and also encourage them connects their knowledge and the application in daily life [5].

One model of learning that can rehearse student's science process skill is inquiry learning model. It is an learning process that emphasize the process of critical and analytical thinking to find the answers of the problems [6].

One of chemistry material that can be applied with inquiry learning model based contextual is reaction rate, especially in the factors that affect the reaction rate subject matter. This is suitable with Basic Competence of 4.7 that is to design, conduct, conclude and present the experimental results of the factors that affect the reaction rate and the reaction order.

Based on the description above, it can be formulated the research problem: (1) How is the quality of teacher's classroom management in inquiry model based contextual? (2) How is the science process skills of students through implementation of inquiry learning model based contextual on reaction rate material? Based on the problems above, the purposes of this research are to know the quality of teacher's classroom management and the student's science process skills, especially in the aspect of hypothesis making, variables identifying, as well as data collecting and processing.

METHOD

This research was descriptive quantitative. The target of this research was the science process skill of Senior High School 16 Surabaya (SMAN 16 Surabaya) Class XI MIA-7 students. The research design that was used is one group pretest-posttest, the data is described as follows:

$$O1 \quad X \quad O2$$

Remarks:

O1 = the student's science process skills pretest score on non-electrolyte

and electrolyte solution material

O2 = the student's science process skills posttest score on the factors that affect the reaction rate material

X = treatment that was given in form of learning with inquiry model based contextual

Learning materials that were used in this research are (1) Syllabus, (2) lesson plan, (3) worksheets. The instruments that were used are classroom management observations sheet and the science process skills test sheet. The data collection methods that were used are the observation method and testing methods.

Student's science process skills were assessed according to the rubric that was provided. Scores were obtained by:

$$\text{Student's science process skills score} = \frac{\text{score that was obtained}}{\text{maximum score}} \times 100$$

Score of student's science process skills was interpreted in Table 1 [7].

Table 1 Categories of Science Process Skills Based on Score

Score	Category
0-20	Very Less
21-40	Less
41-60	Enough
61-80	Good
81-100	Very Good

Learning is successful if the score of student's science process skills which are the focus of this research obtains good or very good categories. To support the results of student's science process skills, the quality of teacher's classroom management was also analyzed using the classroom management restriction criterion with the rule as follows:

$$\text{The quality of classroom management} = \frac{\text{average score of observers}}{\text{maximum score}} \times 100\%$$

The quality of teacher's classroom management scores was interpreted using the categories in Table 2[7] :

Table 2. Categories of Learning Quality Based on Percentage

Prosentase (%)	Category
0-20	Very Less
21-40	Less
41-60	Enough
61-80	Good
81-100	Very Good

Teacher's classroom management is effective when the quality of teacher's classroom management is categorized as good or very good.

RESULT AND DISCUSSION

The results of student's science process skills pretest and posttest score are presented in Table 3.

Table 3. Analysis Result Pretest and Posttest Student's Science Process Skill

No	Science Process Skills	Pretest		Posttest	
		Score	Category	Score	Category
1.	Identifying Variables	32,48	Enough	66,67	Good
2.	Collecting and Processing Data	46,15	Enough	78,79	Good
3.	Concluding	47,86	Enough	84,85	Very Good

The student's science process skills before learning process gained enough category. This showed that the science process skills of students was low so they need a learning that can rehears their science process skills. While at the posttest, students gained good category. The results showed that science process skills had been successful rehearsed to the students.

The science process skills of students was rehearsed with the

implementation of inquiry learning model based contextual, especially in the third phase which rehearsed hypothesis making skill, fourth phase which rehearsed variables identifying skill, and fifth phase which rehearsed data collecting and processing skill.

The enforceability of learning and the teacher's ability to manage learning were assessed using classroom management observation sheet that had been prepared based on the lesson plan. Comparison of teacher's classroom management quality on phase 3, 4, and 5 at meeting 1 and meeting 2 is presented in Figure 1.
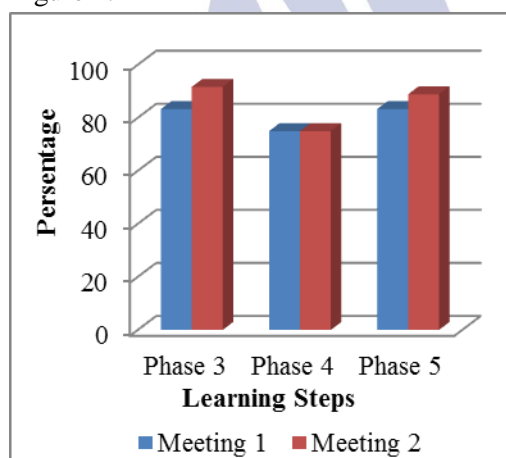

Figure 1. Comparison of Teacher's Classroom management Quality on Phase 3, 4, and 5 at Meeting 1 and Meeting 2

In phase 3, the students were guided to make a temporary answer based on the problem formulation that had been made by analyzing the phenomena in the worksheet. The quality of teacher classroom management in this phase was 83,33% at the meeting 1 and 91.67% at the meeting 2 in very good category at both meetings.

In phase 4, students were guided to determine the variables in the phenomena by asking questions frequently about the types of variables and the differences of each variable. The quality of teacher's classroom management in this phase both at first and second meeting were in good categories with percentage 75%. In phase 5, students did the experiment then recorded and analyzed the results of experiments. The quality of teacher's classroom management in this phase at meeting 1 and 2 respectively 83,33% and 88,89% in very good category. So based on these results, inquiry learning model suitable for rehearsing student's science process skills.

All the aspects that were planned in the lesson plan had been implemented. The quality of teacher classroom management at first and second meeting were 88,33% and 90,87% in very good category. This showed that effective learning was done. Three indicators of effective learning achievement are suitable with procedures, the quantity of performance and quality of the final result [8]

CLOSING
Conclusions

Based on the analysis and discussion of research data, the conclusions are:
1. Teacher's classroom management were effective at meeting 1 and 2 respectively 88,33% and 90,87% in the very good category.
2. Application of inquiry learning model based contextual on the factors that affect the reaction rate subject matter successful rehearsed student's science process skills which the score student's hypothesis making skill (74,75), variables identifying skill (66,67), as

well as data collecting and processing skill (78,79) after learning were on good category.

Suggestions

Based on the analysis result, the researcher proposed the following suggestions:
1. Students were difficult in determining the phenomena's variables, so it is suggested to do scaffolding until students can determine the variables independently.
2. Lab activity takes longer than planned, so it is suggested to perform experiments at home by using materials and tools that can be found in everyday life.

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