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IMPLEMENTATION OF *MINDS-ON ACTIVITY* APPROACH THROUGH *GUIDED INQUIRY* MODEL ON FACTORS THAT AFFECTING REACTION RATE MATTER

Yunita Rachmawati dan Kusumawati Dwiningsih
Chemistry Department, Mathematic and Science Faculty, Surabaya State University
HP : 085746249876, E-mail: yunitarachmawati92@gmail.com

Abstract

The aims of this study to describe the implementation of guided inquiry model and to know the thoroughness student learning outcomes at matter factors that affecting reaction rate. This study was conducted during 2 times meeting with the research design used "One-Shot Case Study". Data collection technique in this study using observation method and test method. The instrument sheet in observation method used of learning feasibility observation sheet and minds-on activity student observation sheet, along with instrument sheet in test method used post-test sheet. Based on the research result : (1) The learning feasibility with minds-on activity approach through guided inquiry model in first meeting was 84.38% and in the second meeting is 84.76%. (2) The students learning outcomes who knew from the average of post-test result student, was 81.15 with percentege thoroughness of students learning outcomes classically was 96% with category 1 students was not completed and 25 students were completed in receiving and understanding factors that affecting reaction rate matter.
Keyword : Guided inquiry, Minds-on activity, Reaction rate

Abstrak

Penelitian ini bertujuan untuk mendiskripsikan keterlaksanaan model guided inquiry dan untuk mengetahui ketuntasan hasil belajar siswa pada materi pokok faktor-faktor yang mempengaruhi laju reaksi. Penelitian ini dilakukan selama 2 kali pertemuan dengan menggunakan desain penelitian "One-Shot Case Study". Teknik pengumpulan data pada penelitian ini menggunakan metode pengamatan dan metode tes. Lembar instrumen pada metode pengamatan menggunakan lembar observasi keterlaksanaan pembelajaran dan lembar observasi aktivitas minds-on siswa serta lembar instrumen pada metode tes menggunakan lembar post-test. Berdasarkan hasil penelitian, diketahui bahwa : (1) Keterlaksanaan pembelajaran dengan pendekatan minds-on activity melalui model pembelajaran guided inquiry pada pertemuan pertama memperoleh nilai sebesar 84,38% dan pada pertemuan kedua sebesar 84,76%. (2) Hasil belajar siswa yang diketahui dari nilai rata-rata post-test siswa sebesar 81,15 dengan perolehan persentase ketuntasan hasil belajar siswa secara klasikal pada post-test sebesar 96% dengan kategori sebanyak 1 siswa tidak tuntas dan 25 siswa tuntas dalam menerima dan memahami materi faktor-faktor yang mempengaruhi laju reaksi.
Kata Kunci : Guided inquiry, Minds-on activity, Laju Reaksi

INTRODUCTION

Education was important and decide factor for every nation and country, because education is the baswas for create the Human Resources (HR) who have great quality in order to survive in the globalization era. For the creation of a great quality education, an ideal and effective, process of learning activity that occurs in schools should be improved better not only Natural Sciences knowledge, but the other knowledge.

According to Government Regulation Number 19/2005 about Standard National Education in a learning process which could be implemented as interactive, inspiring, fun, challenging, motivating the students to active participate and provide enough space for innovation, creatively, and independence of students [1].

The fact did not match the expected standards national education. Based on interviews at the time pre-research on March 8, 2013 matter factors that affect

the rate of reaction, it was found that the fact of the learning process occurs still tend to focus on the aspects of transferred knowledge from the educator (teacher) to learners (students) only. In other words, this method was usually called the lecture method (teacher centered), because students only use the brain's ability to absorb and save as much information who obtained from the teacher [2].

The ideal learning activities was focus on student learning (student centered). The student centered were an activity that involves students actively, such as do the experiment, making hypothesis, predicted experimental results, discussed among the group, expressed ideas, analyzed and solved the problems then presented in front of the class, so the students were expected could easily construct their own knowledge (constructivism) [3].

When the learning process was more towards to student centered learning, the students were able to construct their own knowledge, it means the students would trained to analyze a problem, and then students were trained to identify, evaluate and construct, arguments and be able to solve the problem exactly.

And based on the results of question sheet instrument pre-research, the results of students' average score was 53.6, it means below the average of thoroughness minimum standard (TMS) that determined by school was 70. Known from the results of the questionnaire pre-research of public senior high school that the lack of in-depth discussion of student worksheets, that was done by teacher after the process of teaching and learning activities, so that all of students just did the worksheet, and then the teacher in that high school asked to collect and assess.

Based on the problem from the results of questionnaires and question sheet instrument pre-research students at public senior high school, need to be considering the existence of a minds-on activity approach, that appropriate to answer the problems above. Minds-on approach was a approach basis on a constructivist approach of Piaget and Vygotsky. Constructivism to understand the nature of learning as a human activity to build or create knowledge with the way of trying to give meaning to appropriate their experience. [4]

Minds-on activity was activity that was focused on the essence of the concept, which allows students to build a thinking process and encourage them to ask questions and seek answers that could improve students' knowledge and thereby gain their understanding [5].

Based on the results of a questionnaire sheet of pre-research students of public senior high school, which consists of 14 questions related to the research, says that the lack of experimental activities that could involve students actively participate in a learning activity. At the time of the matter of factors that affecting the reaction rate, which should be done with the activities of the experiment, but only teachers who conducted experiments (demonstration) in front of the class and students only see the experiments activity who conducted by teacher. If in a learning activity teacher did not involve students actively participating, then the students would not be able to understand the matter so that the effect on student learning outcomes.

Thus, the researchers consider a guided inquiry learning model, which was appropriate to improve and repair the process of learning activity, in order to learning activity become student-centered. This was support from the view Education Unit Level Curriculum that learning science should conducted scientific inquiry to cultivate the ability to think, work, behave, and communicate scientific skills as an important aspect of life [6].

Through model of guided inquiry students could answer questions, formulated the hypothesis related to the problem formulation, give an opinion or an idea, designed experiments, building scientific thinking skills, analyze problems, formulate the conclusions and seek verification as independently. So after did guided inquiry learning model

students could learn to find and build their own understanding not only receive matters from the teacher (teacher center).

Based on these things could affect the minds-on activity students (which focuses on students' thinking skills), so that could affect the student learning outcomes better than before. This would be measured using the post-test instrument that would be conducted at the end of the meeting. Learning outcome was the ability of the students after their received a learning experience, which was a mental process that was obtained by the students in the form of information, skills, procedures the ideas and values [7].

From the explanation above, researcher have a aimed to create a learning process that emphasize the guided inquiry learning model with minds-on activity approach who could engage the students to found their comprehension of concept by themselves. When the students could construction their comprehension of concept, so as indirect the learning process who obtained the students would be more meaningful so could be influence the learning outcomes who obtained the students in reaction rate after the learning process finished.

METHOD

The type of research conducted at this public senior high school, was quasi-experimental or pre-experimental research because it does not use comparator class (only use one class) that was a class XI Science 2. The research design was one-shot case study, then could be described as follows :

X O	[8]

Description:
X = treatment given (variable independent
O = observation result (variable dependent)

Research procedure has several stages, namely: 1) Planning, includes did pre-research, making research proposals, making l earning instrument (which consist of a syllabus, lesson plans, worksheets, and the lattice about the post-test) and a research instrument. 2) Implementation of learning through minds-on activity approach with guided inquiry model in public senior high school 3) Analysis of the data research obtained in descriptive studies.

Data collection techniques in the observation method, used research instrument were learning feasibility and minds-on activity observation sheet. The analysis of observation learning feasibility conducted during 2 meetings and observed by 2 observers.

Results of assessment score the ability of teacher in learning feasibility that obtained calculated using the formula percentage as follows :

$$LF = \frac{\Sigma \text{ score all of aspects that obtained}}{\Sigma \text{ maximum score}} \times 100\%$$

Description :
LF = Learning Feasibility

Then the percentage value of the learning feasibility were analyzed with used the criteria of learning feasibility restrictions as Table 1. bellow :

Table 1. Criteria limits of learning feasibility

Restriction	Criteria
0% – 20%	Once less
21% – 40%	Less
41% – 60%	Enough
61% – 81%	Good
81% – 100%	Excellent

[9]

Learning feasibility of classroom would be said to be successful if the results of the learning feasibility were limits 61% - 100%.

Data collection techniques in the test method, used instruments post-test sheet. Post-test sheet distributed in the last meeting aims to know the thoroughness of students learning outcome who used minds-on activity approach through guided inquiry learning model.

There were would be the results of students post-test individually and

classically. Individually, student learning outcomes said to complete if the post-test result reached ≥70. The calculation of the value of individual student learning outcomes could be analyzed by the following formula:

$$\text{Score} = \frac{Total\ right\ answer}{Total\ question} \text{ x } 100$$

Classically, a class was said completed in a learning process where as much as 85% of students in the class to get the value of ≥70 in the students post-test results. To determine the percentage completeness classically obtained by the formula:

$$\%\ CC = \frac{\Sigma\ \text{student completeness}}{\Sigma\ \text{all of student in 1 class}} \text{ x } 100\%$$

Description:
CC = completeness classically

RESULT AND DISCUSSION

Learning Feasibility

The learning feasibility of observation sheet used to know the ability of teacher in learning management. Results of learning feasibility would be described in Table 2. as below:

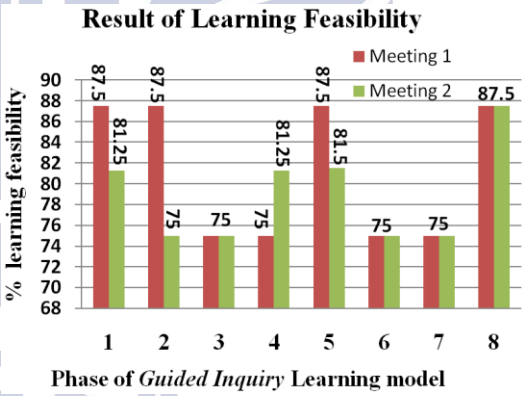
Table 2. Result of learning feasibility

Phase of Guided Inquiry Learning model	Meet 1 (%)	Meet 2 (%)
Introduction	90.62	87.5
Main Activity	82.81	91.96
Phase 1 : Conducting observation with showing the phenomenon	87.5	75
Phase 2 : Discussing the problem formulation	87.5	75
Phase 3 : Making hypothesis	75	75
Phase 4 : Planning problem solving	75	81.25
Phase 5 : Doing experiment	87.5	81.25
Phase 6 : Doing observation and collect data	75	75
Phase 7 : Analysis of data	75	75
Closing	81.25	90.62
Phase 8 : Making conclusion	87.5	87.5
Average	**84.38**	**84.76**
Total Average	**84.57**	
Criteria	**Excellent**	

Based on the result data from of Table 2. about learning feasibility result, the ability of the learning management of

teachers during the learning process, in the first meeting from the introduction until closing if averaged was 84.38 and in the second meeting if averaged was 84.76%, if totaled then averaged was 84.57% so we can conclude based on Table 1. about criteria limits of learning feasibility the result include in the excellent criteria.

The learning feasibility of teacher in learning activity at matter factors that affecting reaction rate, said to be successful if the results of the assessment sheet learning management entry in the minimum criteria as a good with the limit value ≥61%. Based on the results of learning feasibility who obtained by teachers had successfully done with the criteria excellent. Result learning management would showed in a diagram Picture 1.



Picture 1. Result of Learning Feasibility

Thoroughness Students Learning Outcomes

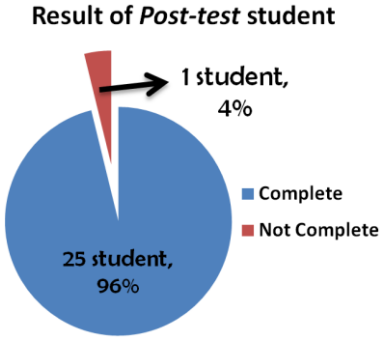
Student learning outcomes data could be known through the results of the post-test score of students at matter factors that affecting reaction rate.

The post-test instrument sheet was given after the learning process finished in the second meeting. The question in post-test instrument sheet in the form multiple choice consists of 10 questions. There were 2 kinds of students learning outcomes as individually and classically.

Table 3. Result of post-test student

No.	Student Name	Result of Post-test	Category
1.	A	80	Complete
2.	B	80	Complete
3.	C	80	Complete
4.	D	90	Complete
5.	E	80	Complete
6.	F	80	Complete
7.	G	80	Complete
8.	H	80	Complete
9.	I	80	Complete
10.	J	80	Complete
11.	K	80	Complete
12.	L	80	Complete
13.	M	90	Complete
14.	N	80	Complete
15.	O	80	Complete
16.	P	90	Complete
17.	Q	80	Complete
18.	R	90	Complete
19.	S	70	Complete
20.	T	80	Complete
21.	U	90	Complete
22.	V	60	Not complete
23.	W	80	Complete
24.	X	70	Complete
25.	Y	80	Complete
26.	Z	100	Complete
Total		**2110**	
Average		**81,15**	

The student learning outcomes individually after analyzing, known that the results of the average post-test students was 81.15. With the details 25 students got the result score post-test achieve ≥70 and 1 student got was <70. Results of learning outcomes student would be presented in diagram Picture 2.



Picture 2. Student Learning Outcomes

After analyzed the student learning outcomes classically, obtained the percentage completeness was 96%, with category 25 students complete and 1 student not complete. It means that the percentage completeness was 96%, has been above minimum was 85%. Showed that that the average result of learning outcomes, has been completed in receiving and understanding the matter factors that affecting reaction rate.

CLOSING

Conclusion

Based on the research result and discussion that have been described previously, it could be concluded that:

1. The learning feasibility using guided inquiry learning model with minds-on activity approach in the first meeting at 84.38% and 84.76% for the second meeting it means include in excellent criteria.
2. The average score results of the post-test students was 81.15. Acquisition of percentage completeness on the post-test was above standard percentage completeness was 96%.

Suggestion

1. It was expected that the teacher or researcher could consider physical capabilities of students that could affect learning activities.
2. It was important for teachers to consider the time allocation to be used to start the learning process activity, so could maximize the uses of time in achieve a great learning management maximally in class.

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