THE EFFECTIVENESS OF QUANTUM METHODS USING VOLCANOES MINIATURE TO IMPROVE LEARNING OUTCOMES ABOUT SOIL FORMATION CLASS V SDN 01 KEBONROWOPUCANG

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ABSTRAK

Pada tanggal 3 Maret 2016 penulis melakukan pembelajaran Ilmu Pengetahuan Alam tentang pembentukan batuan. Hasilnya hanya 10 siswa yang mencapai nilai 70 (KKM) dari jumlah siswa 23. Dari hasil tersebut penulis melakukan perbaikan pembelajaran dengan menggunakan Metode kuantum dengan miniatur gunung berapi, dalam hal ini disebut tahap siklus 1. Pada siklus 1 hasil belajar siswa meningkat dari rata-rata kelas yang semula 57,8 menjadi 73,4 dengan ketuntasan 80%. Karena ketuntasan belajar siswa belum mencapai 100%, maka penulis melakukan perbaikan pembelajaran pada siklus 2 dengan media gunung berapi dan dipraktekan bersama. Dengan tujuan siswa lebih mendapat pengalaman dalam belajar. Pada siklus 2 hasil belajar siswa mengalami peningkatan dari rata-rata kelas 73,4 menjadi 80,8 dan ketuntasannya juga mengalami peningkatan dari 80% menjadi 100%. Dengan peningkatan hasil yang terjadi pada siklus 2, maka penulis dapat menyimpulkan bahwa penggunaan metode kuantum dengan miniatur gunung berapi dapat meningkatkan hasil belajar dan dapat menjadikan siswa lebih aktif dalam pembelajaran.

Kata Kunci : Metode Kuantum,Miniatur Gunung Berapi, Hasil Belajar

ABSTRACT

On March 3, 2016 writer of Sciences of learning about formation of rocks. The results are only 10 students who achieve a score of 70 (KKM) ofthe number of students 23. From these resultsthe authors make improvements learning using quantum method with a miniature volcano, in this case called the stage of cycle 1. In cycle 1 increase student learning outcomes of the mean average class that originally 57.8 becomes 73.4 with 80% completeness. Because mastery learning student has not reached 100%, the authors make improvements in cycle 2 of learning with media volcanoes and practiced together. With the aim of more students gain experience in learning. In the second cycle learning outcomes of students has increased from an average grade of 73.4 into 80.8 and completeness also increased from 80% to 100%. With the yield improvement that occurred in cycle 2, the authors conclude that the use of quantum methods with miniature volcano can improve learning outcomes and can make students more active in learning.

Keywords: *Quantum Method , miniature volcano , Learning Outcomes*

INTRODUCTION

Science is a science that is closely related to how to find out about nature systematically through a process of discovery (Permendiknas Nomor 22 Tahun 2006). In addition, science is also seen as a process, as a product, and as a procedure, a procedure as a methodology or method used to find out something commonly called the scientific method (Trianto, 2012). The science learning process emphasizes more on providing direct experience to develop students' competencies to understand the natural surroundings which are carried out by scientific inquiry. (Sund, 1993) define science as "knowledge that is systematic and organized regularly, universally applicable and in the form of a collection of data from observations and experiments.

At the elementary education level (SD) the science learning process is still running using reading, writing, and memorizing. The objectives of learning science are as follows. (1) understand natural surroundings; (2) have the skills to gain knowledge in the form of scientific process/method skills; (3) have a scientific attitude inside get to know the environment and solve the problems it faces (Sulisttyorini, 2007). For fifth-grade students, many problems arise in learning the science of volcanoes. This is where the teacher is required how to provide explanations and understanding because in general students will feel bored and bored when there is a lot of material to be recorded and memorized but they have no interest in the material being taught.

Mastery of concepts and student achievement in science learning on the material "Soil Formation" in class V semester II SD Negeri 01 Kebonrowopucang Academic Year 2015/2016 are generally still low. This can be seen from: A total of 10 students from 23 students in class V scored 75 and above or who achieved mastery learning. A total of 13 students from 23 students in class V scored below 75 or there were still students who had not yet completed their studies. The teacher in teaching about volcano material only uses the blackboard.

Based on these findings, the authors try to improve the learning process that is more active, creative, and innovative. Through the improvement of better learning and the use of media or teaching aids, the author hopes that there will be an increase in the learning outcomes of fifth graders on volcanoes.

After the author reflects on science learning about rock formation, the following data can be obtained:

a. Students do not listen to the teacher's explanation as evidenced by the frequent students talking alone with their classmates and not paying attention to the teacher's explanation.

b. Students do not understand the material taught by the teacher.

c. Only a small number of students dared to ask and were able to ask questions.

d. Lack of interest and attention of students because the teacher's explanation is less interesting.

e. The results of the formative test showed that 10 out of 23 students scored below the KKM.

Based on the identification of problems experienced by students in learning science about rock formation, the author tries to reflect and analyze these problems, namely:

a. Teachers pay less attention to students, so there are still, many students talk to themselves when learning takes place.

b. The teacher's explanation is too fast so that students

cannot catch and understand the learning material which results in the the inability of students to understand the material.

c. The teacher does not provide concrete examples that are easy for students to understand.

d. The teacher does not use relevant media and interesting teaching aids.

e.The learning model is monotonous, thus making students more saturated in following the learning process.

f. The teacher does not allow students to ask questions.

In short, it can be said that the student's failure is caused by the learning

a process that is less effective and innovative because in learning the teacher has not used teaching aids/learning media that can make it easier for students to understand volcano material. For this reason, it is necessary to improve learning.

From the analysis of the problems mentioned above, the authors conducted

a study to see how far students' learning outcomes about volcanoes were using the quantum method assisted by volcano miniature media. By using the right method and assisted with learning media, it is hoped that students can understand the learning material and can improve student learning outcomes, especially on volcanic material.

DISCUSSION

Classroom Action Research (CAR) is research conducted by teachers because of learning problems in their classrooms. This research was conducted by designing, implementing, and reflecting on collaborative and participatory actions to improve their performance as teachers so that student learning outcomes can increase (Arikunto, 2010).

CAR as research has its limitations because teachers act as teachers as well as researchers often find it difficult to collect data. Therefore it takes a colleague or supervisor who will assist researchers in collecting valid data.

CAR begins with the teacher's problems in learning. These problems can be in the form of problems related to the process and student learning outcomes that are not by the expectations of the teacher or other things related to the teacher's teaching behavior and student learning behavior. The steps for finding problems are followed by identifying, analyzing, and formulating problems, then planning CAR in the form of corrective actions, observing, and reflecting. (Kemmis, 1988)

The four main steps in CAR are planning, taking corrective actions, observing, and reflecting which is a cycle in CAR that is always repeated. After one cycle is complete, there may still be problems that have not been solved, then proceed to the next cycle with the same steps. Thus, based on the results of actions or experiences in the first cycle, the teacher will return to the planning, implementation, observation, and reflection steps in the second cycle. (Kusumah, 2011)

The quantum method is a learning process approach that can bring out students' natural abilities

and talents in building an effective learning process (DePorter, 2001). The Quantum teaching-learning model emphasizes techniques to improve self-ability and the process of realizing one's potential. Porter (De Porter, 2003) states that the main principle of quantum teaching is "Bring their world to our world and deliver our world to theirs". This is the main principle that is the basis of the quantum teaching model. This can be interpreted that the teacher is reminded of the importance of entering the student's world by relating what we teach to an event, thought, or feeling obtained from the student's home, social or academic life. After the link is formed, the teacher can bring students into the world of the teacher and give students an understanding of the contents of the world (DePorter B. M., 2005)

The research subjects for learning improvement were fifth-grade students of SD Negeri 01 Kebonrowopucang in the 2015/2016 academic year in science subjects in the second semester. The number of fifth-grade students is 23 consisting of 13 male students and 10 female students.This school is located on Jalan Desa Kebonrowopucang, Karangdadap sub-district,Pekalongan district.

1. Research Site

Learning Improvement Research was carried out at SD Negeri 01 Kebonrowopucang, Karangdadap District, Pekalongan Regency.

2. Research Time

Learning Improvement Research was conducted in March 2016 with the help of colleagues as observers. The research was carried out in 2 cycles with the following schedule:

Cycle 1: Thursday, March 17, 2016

Cycle 2: Thursday, March 24, 2016

3. Parties involved in Research

In the implementation of this research, there was a collaboration between the researcher, the teacher's friend (colleagues), the Principal of SD Negeri 01 Kebonrowopucang, and the tutor/supervisor I. The roles of each are as follows:

• The researcher acts as a teacher.

• Teachers' friends act as peers.

• The principal of SD Negeri 01 Kebonrowopucang acts as a facilitator.

• Tutor supervisor/supervisor as a consultant in the implementation of research.

Learning Improvement Research is carried out in 2 cycles by going through the stages of planning, implementing actions, observations, and reflexes that have been designed in the lesson plan. At this stage, the researcher analyzes the data that has been obtained. The results of the analysis of existing data are used to evaluate the results to be achieved.

Reflection is intended as an effort to examine what has or has not happened, what was produced, why it happened, and what needs to be done next. The strengths and weaknesses that exist during the learning process are used to determine the next steps to improve learning outcomes in cycle II.

Then the implementation of the second cycle, the learning improvement activities in the second cycle are the same as the activities in the first cycle, only the activity planning is based on the reflection results of the first cycle so that it is more directed to the improvement of the implementation of the first cycle. miniature volcano medium.

In the implementation of the corrective action that the author took, data related to the problem that became the focus of improvement, namely efforts to improve student learning outcomes on soil formation material using the quantum method with volcano miniature media

1. Pre Cycle

The author's learning during the pre-cycle did not work. This is evidenced by the acquisition of students' formative test scores that are still below the KKM. Of the 23 students, only 10 students achieved the KKM score (70), so that the learning completeness of the fifth-grade students (five) was 48%. For this reason, the authors make improvements to learning cycle 1, with the hope of increasing student learning outcomes and mastery.

Then the second cycle was carried out. In general, the implementation of the learning improvement cycle 1 went quite well. Students have shown better learning outcomes than the learning outcomes obtained during the pre-cycle. After the improvement of learning cycle 1 was carried out, the average score of students progressed,

from 56.9 to 73.4 and the completeness of student learning outcomes also progressed, from 48% to 80%. While the activeness of students in learning is less active, this is evidenced in the average value of student activity which only reaches 3.6 (on a scale of 1-5).

From the implementation of improved learning cycle 1, students have shown better learning outcomes and are more enthusiastic about learning. This can be seen from the average score of students which shows an increase from the pre-cycle, from 56.9 to 73.4. Meanwhile, student learning completeness increased from 48% to 80%.

Based on the findings of the improvement of learning in cycle 1, it shows that the average value of the class has increased. However, judging from the score, there are still many students who score below the KKM, which is 18 students. In addition, the level of student activity in learning is also still lacking. This is also evidenced by the acquisition of activeness scores which reached an average of 3.04 (on a scale of 1-5). From this finding, the writer took the initiative to do cycle 2 learning which is expected to improve the results obtained in cycle 1 so that students can show more improvement both in terms of grades, percentage of completeness, and student activity.

In general, the implementation of the improvement of learning cycle 2 went well. Students have shown better learning outcomes than the learning outcomes obtained during cycle 1. After the improvement in learning cycle 2 was carried out, the average score of students progressed from 60.5 to 79.5 and the completeness of student learning outcomes also progressed, namely from 25% to 90%. Meanwhile, the activeness of students in learning is also progressing. In improving learning, most of the students actively participate in the lesson. This is evidenced in the average value of student activity which reaches 4.52 (on a scale of 1-5). From the implementation of improved learning cycle 2, students have shown better learning outcomes and are more enthusiastic about learning. This can be seen from the average score of

students which shows an increase from cycle 1, which is from 73.4 to 80.8. Meanwhile, student learning completeness increased from 80% to 100%.

Based on the findings of improvement in learning cycle 2, it shows that the average grade of the class has increased and the acquisition of student scores who have reached above the KKM is 23 students out of 23 students. In addition, the level of student activity in learning has also increased. From cycle 1 which was less active, in cycle 2 the students were already active in following the lesson. This is evidenced by the acquisition of activeness scores which reached an average of 4.52 (on a scale of 1-5).

The results of science learning research on soil formation in class V SD Negeri 01 Kebonrowopucang Karangdadap District, Pekalongan Regency in semester 2 of the 2015/2016 academic year before the cycle (pre-cycle) many students did not understand the material. This can be seen from the low formative test scores. Of the 23 students, only 10 students scored equal to or above the KKM (70) while the average class was 57.8. So that the learning completeness obtained by students is 48%. This condition is caused by the author at the time of learning only used the lecture method, did not use teaching aids and the application of the quantum method, and did not provide concrete examples. In addition, during learning, students are not directly involved so they do not gain experience in understanding the material.

To overcome the problems above, the authors make improvements to learning cycle 1 and cycle 2 with the help of colleagues.

In learning cycle 1, the author focuses on the application of the quantum method by using a miniature volcano as a medium to improve student learning outcomes.

In the improvement of learning cycle 1 with a KKM of 70, students who scored equal to or more than the KKM were 18 out of 23 students and the rest scored below the KKM. Meanwhile, the average score of the students' formative test results increased from 57.8 to 73.4 so that their learning mastery also

increased from 48% to 80%. Because the mastery of learning has not reached 100%, the authors make improvements to learning cycle 2, with the hope that student learning outcomes and mastery of learning increase so that science learning about soil formation can be successful.

In the improvement of learning in cycle 2, the authors applied the quantum method better than in cycle 1, after the students felt comfortable with what they were doing, the authors began to allow students the opportunity to practice using the miniature volcanoes that had been provided.

Based on the results of the improvement in learning cycle 2, the formative test scores obtained by students have increased. This is evidenced by the number of students who scored the same or more than the KKM (70). There were 23 students out of 23 students. With the increase in the number of students who scored the same as or more than the KKM, the average value of the class also increased from 73.4 to 80.5 while learning completeness increased from 80% to 100%. In addition to learning outcomes that have increased, student learning activity has also increased.

Table 4.7. Learning Outcomes of Pre-cycle, Cycle 1, and Cycle 2

No	Nilai	Pra Siklus		Siklus 1		Siklus 2	
		Jml. Siswa	Jml. Nilai	Jml. Siswa	Jml. Nilai	Jml. Siswa	Jml. Nilai
1	100	0	0	0	0	3	300
2	90	0	0	2	180	3	270
3	80	2	160	9	720	10	800
4	70	9	560	7	490	7	490
5	60	2	120	5	300	0	0
6	50	5	250	0	0	0	0
7	40	6	240	0	0	0	0
Jumlah		23	1330	23	1690	23	1860
Rata-rata		57,8		73,4		80,8	
Ketuntasan (%)		48%		80%		100%	

(Arikunto, Prosedur Penelitian Suatu Pendektan Praktik, 1997)

From the data above, a graph of the increase in results and learning completeness can be made from pre-cycle to cycle 2.

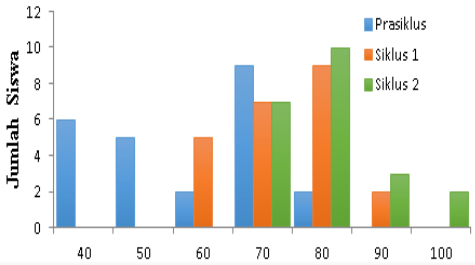

Figure 4.4. Graph of Learning Outcomes Pre-cycle, Cycle 1, and Cycle 2

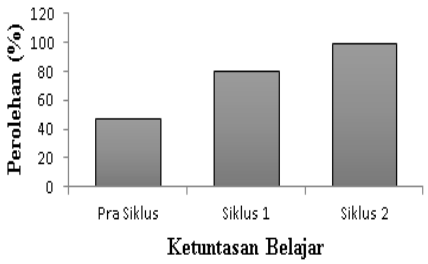

Figure 4.5. Per-cycle Learning Completion Graph

From the increase in learning mastery obtained by students in cycle 2, which is 100%, while the criteria for mastery learning that the author sets are 100%, the improvement in learning is stopped in cycle 2. Because the improvement in learning in cycle 2 has succeeded in achieving the learning mastery that the author has set.

CONCLUSION

Based on the results of the learning improvements made by the author through 2 (two) cycles, namely, cycle 1 and cycle 2, it can be concluded that:

1. The use of the quantum method with miniature volcanoes can help students understand the material about soil formation.
2. The use of quantum methods with miniature volcanoes improves student learning outcomes.
3. The use of volcano miniature media can activate students in learning.
4. Completeness of student learning increases.

Follow-up Suggestions

Based on the results of the learning improvement research that the author carried out, then to support the success of teacher learning improvement activities, the teacher should carry out several things below:

1. Develop and prepare learning materials as well as possible, so that the delivery of subject matter to students does not experience difficulties.
2. Using appropriate methods and media or in accordanc

learning improvements to improve student achievement and learning outcomes.

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