osfiani_et_al_2020_improving_student_mathematics_achievement.pdf

by Turnitin 'cek

Submission date: 04-Apr-2022 09:29AM (UTC+0700)
Submission ID: 1800802743
File name: osfiani_et_al_2020_improving_student_mathematics_achievement.pdf (147.41K)
Word count: 2543
Character count: 14395

INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH VOLUME 9, ISSUE 03, MARCH 2020 ISSN 2277-8616

Improving Student Mathematics Achievements Of Elementary School In 1st Grade Through Demonstration Models

Okta Rosfiani, Cecep Maman Hermawan, Rita Komala Sari, Sintia Hastuti

Abstract: The demonstration model aims to achieve two learning outcomes, namely the mastery of well-structured knowledge and the mastery of all types of skills. There is no previous research that investigates the demonstration model in the first grade of elementary school, especially in mathematics. The purpose of this paper is to investigate the demonstration model and illustrate the application of the demonstration model. This class action research uses the R&H class action research model. Participants in this study were first-grade students in one of the Public Elementary Schools in South Tangerang, Banten Province, Indonesia, in learning the reduction numbers. Data has been collected through tests, observations, and documents. Data were analyzed using text analysis and descriptive statistics. Research data shows that the use of demonstration models can significantly improve students' understanding of mathematics, and can improve cognitive and student involvement. In the pre-cycle, students who received the Minimum Mastery Criteria (MMC) were 15 students or 48%. In cycle 1 there were 21 students or 67.2% who got MMC. In cycle 2 there were 28 students or 89.6% who got MMC. So the number of students who have obtained MMC scores continues to increase from cycle to cycle.

Index Terms: Mathematics, learning outcomes, demonstration model, elementary school.

1 INTRODUCTION

THE lecture-demonstration method is a teacher-centered instructional strategy used by the teachers to teach the selected content to a specific group of students [1]. The teacher is seen as a repository of all knowledge while students are passive recipients of the knowledge transmitted by the teacher in the learning process. The method has the advantage of covering a wider area within a short time but it is not student-centered and students do not gain mastery of concepts [2]. Lecture demonstrations are teacher-led with students passively observing the results [3]. So the demonstration method is a teacher-centered teaching method which means that all controls are held by the teacher during the learning process until it is finished.[4] (2018) published the results of his research that this study examines the effect of the demonstration method on students' achievement in financial accounting in Gombe state, Nigeria. Investigated the effectiveness of demonstration and lecture methods on economic learning in high school students in the state of Borno, Nigeria. The study by [5] claim lecture-demonstrations have been conducted in chemistry classrooms for hundreds of years, little research exists to document the frequency. In an analysis of demonstration methods, [6] found significant improvement in student learning outcomes, due to the addition of demonstration models, has been observed.To date, demonstration learning methods have still not yet been closely investigated. There is a current relative general notable surprising paucity of studies investigating that this demonstration learning method can improve student learning outcomes. Few published studies have focused on demonstration learning methods. No previous study has investigated demonstration learning methods in the first grade of primary schools specifically in mathematics. The objective of the present work paper is to investigate the demonstration learning method and to determine/examine demonstration learning methods. The findings of this study will help the evidence supporting various theories to account for the effects of demonstration learning methods outcomes mathematics. your paper.

2 LITERATURE REVIEW

2.1 Demonstration Models

Demonstration models are often costly to purchase from vendors or take a significant amount of time and skill to construct [6]. Lectures are often perceived as authoritative, instructor-centered, monotonous, and content-dense, making the students feel disinterested, distracted, and dissatisfied. Once set, students' apathy toward lectures tends to remain unmoved by the gravity of the topic, competence of the teacher or the audiovisual aids used [7]. Demonstration learning is designed to introduce students to subjects to build interest, arouse curiosity, and stimulate them to think. Students cannot do anything if their thoughts are developed by the teacher. Many teachers make the mistake of teaching, that is, before students feel involved and mentally ready the teacher directly provides the subject matter. Demonstration models have been widely used and tested in schools and non-schools. This model has strong empirical evidence to support its use to achieve certain types of student learning. As well as these demonstration models, they get theoretical support from behavioral theory, social cognitive theory, and teacher effectiveness research [8] According to [8], demonstration models aim at achieving two learning outcomes, namely the mastery of well-structured knowledge and the mastery of all types of skills. The demonstration model is a teacher-centered model which requires the teacher to explain the material clearly, demonstrate and give examples of appropriate

- *Department of Teacher Education Madrasah Ibtidaiyah, Faculty of Character, Universitas Muhammadiyah Jakarta, Indonesia. E-mail: rosfianiagus@gmail.com*
- *Department of Teacher Education Madrasah Ibtidaiyah, Faculty of Character, Universitas Muhammadiyah Jakarta, Indonesia.*
- *Bachelor of education, an elementary school teacher in South Jakarta, Indonesia.*
- *Currently pursuing a bachelor's degree program in Madrasah Ibtidaiyah Teacher Education, in the Faculty of Character, in Universitas Muhammadiyah Jakarta, Indonesia.*

behavior so that the material is easily understood by students. The demonstration model has five phases as follows [8] :

Phase 1: Explain the purpose and open the lesson

Phase 2: Demonstrating knowledge and skills

Phase 3: Provide guided practice

Phase 4: Check to understand and prepare feedback

Phase 5: Provides further training and knowledge transfer

The conclusion of the demonstration model is to increase the mastery of skills and declarative knowledge that can be carefully defined and taught in stages. And the demonstration model requires unique classroom management skills so that the learning environment is structured.

2.2 Learning Outcome in Matematics Classroom

According to [9], mathematical knowledge for teaching goes beyond that captured in measures of mathematics courses taken or basic mathematical skills. Achievement motivation literature places an individual's perception of academic competence as central to his or her motivation and performance in achievement settings [10]. Classroom contextual factors can improve teacher practice and produce mathematics learning in students [11]. [12], mathematics the core subjects taught in all levels of education. But many students think that mathematics is a difficult subject. Interest in improving mathematics achievement has garnered increased attention across an array of diverse settings ranging from the individual classroom to the halls of Congress [13]. Interest in learning is a source of intrinsic motivation that encourages students to do what they want so that it impacts on learning achievement [14]. Reasonable to argue that how teachers stimulate a student's interest in the subject matter in some way impacts the student's learning, no matter where that learning takes place, either in the classroom or outside of it. Factors in a teacher's teaching behavior that are related to fostering interest in students when it comes to learning are the subject of debate and research [15]. In conclusion, learning outcomes are abilities and skills that are obtained by individuals after experiencing the learning process that can provide behavior change both knowledge, understanding and individual skills so that it becomes better than before.

3 METHODS

This action research uses the R&H Classroom Action Research Model which consists of 4 stages, namely the exploration, planning, action and observation, and discussion stages.

Fig. 1. The R&H Classroom Action Research Model

This action research was conducted in a class at one of the elementary schools in South Tangerang. Thirty-two students were made as study participants. This research was conducted in the first semester of the 2018/2019 school year with mathematics subject matter.

3.1 Data Analysis

Data analysis techniques that researchers use in improving mathematics learning on the subject of simple fraction learning to improve the ability of first-grade students in one school in South Tangerang are qualitative data analysis techniques and quantitative data. Quantitative data analysis was performed using descriptive statistics using percentages, calculating the average based on the minimum value of the minimum completeness criteria (KKM) of students in mathematics at the end of each cycle to find out the improvement in student learning outcomes.

3.2 Observation

Behavioral observation is done by selecting an instrument that is a behavioral protocol for recording behavior, observing individuals for that behavior, and checking points on a scale that reflects behavior (checklist of behavior) [16]. This observation is a direct observation made by researchers in the learning process in class one on mathematics. Observations in the form of observation sheets that have been detailed show aspects of the observed process.

3.3 Documentation

This documentation is used as evidence of the conduct of research in the form of photographs when students and teachers are actively involved in learning activities during the research.

3.4 Triangulation

Triangulation is a process of corroborating evidence from different individuals (for example, teachers, principals, students), types of data (for example, field notes observations and interviews), or methods of collecting data (for example, documents and interviews) in descriptions and themes in research qualitative. Investigators examine the truth of each source of information and find evidence to support a theme [15]. In this action research, the triangulation used is observation, test, and documentation.

4 RESULTS AND DISCUSSION

4.1 Pre-Cycle

In pre-cycle learning, the following results are obtained, from thirty-two students, only fifteen students get mastery learning. While seventeen students have mastery of learning or their grades are still below the Minimum Mathematical Completion Criteria (MMC) set by the school which scores 60. The percentage of mastery of learning outcomes only reaches 48%. The results showed that student learning outcomes were still low and the MMC determined at least 80% had not been achieved. For this reason, researchers must take action to improve learning to the next stage to achieve better results, that is, cycle 1.

4.2 Cycle 1

Data from observation of cycle 1 showed 80% of teacher behavior from the 5 phase demonstration model was obtained. While student learning outcomes data in cycle 1 shows that the use of demonstration models with media (beads) can improve student learning outcomes compared to student learning values in the pre-cycle. Of the thirty-two students, eleven students did not get complete learning scores, while twenty-one students received mastery learning scores, with a mastery percentage of 67.2%. However, this percentage has not been met as expected, that is, 80% of students in the class must obtain a score of 60 for the Minimum Completeness Criteria (MCC) desired for successful mathematics learning. For this reason, researchers continue to advance learning to the next stage, cycle 2. Figure 2 shows the results of observations and mathematics learning outcomes of students in cycle 1.

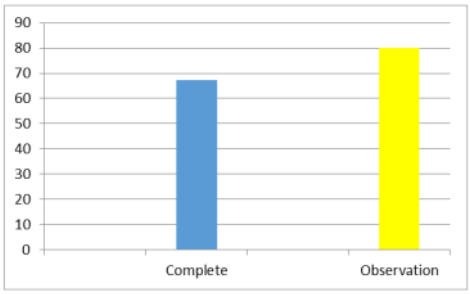

***Fig. 2**. Percentage of student learning outcomes and teacher observations in cycle 1*

4.3 Cycle 2

Data from observation cycle 2 shows 100% of teacher behavior from the demonstration model obtained. While student learning outcomes data in cycle 2 shows that the use of demonstration models with media (cakes and fruit, candy) can improve student learning outcomes compared to student learning values in cycle 1. Of thirty-two students, twenty-eight students achieve the Completion Criteria value Minimum (MMC), with an achievement percentage of 89.6%. This shows a significant increase compared to cycle 1. From the results obtained, the researcher finally stopped this study in cycle 2 because it met the desired learning criteria, at least 80% of students in the class received MMC scores. For this reason, this research was considered successful. Figure 3 shows the results of observations and mathematics learning outcomes of students in cycle 2.

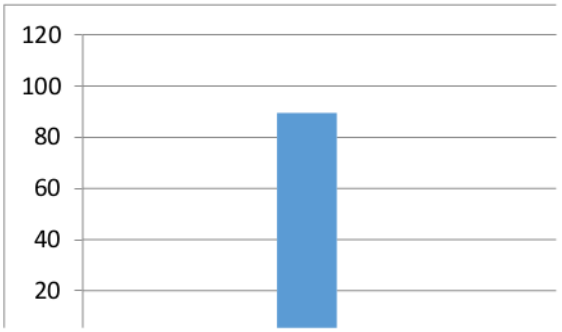

***Fig. 3**. Percentage of student learning outcomes and teacher observations in cycle 2*

Comparison of student mathematics learning outcomes data in pre-cycle, cycle 1, and cycle 2 is presented in table 1.

TABLE 1
STUDENT MATHEMATICS LEARNING OUTCOMES IN PRE-CYCLE, CYCLE 1, AND CYCLE 2

Percentage	Pre-Cycle	Cycle 1	Cycle 2
Percentage is complete	48%	67,2%	89,6%
Percentage is incomplete	52%	32,8%	10,4%

Table 1 shows that in pre-cycle learning activities, students received a percentage of Minimum Mastery Criteria (MMC) of 48%. In cycle 1 it increased by 67.2%. In cycle 2 it increased again to 89.6%. While the teacher observation data in cycle 1 reached 80% completeness of the teaching demonstration model implementation by the teacher. In cycle 2 it increased to 100%. Figure 3 shows a comparison of pre-cycle learning outcomes data, cycle 1 and cycle 2, as well as observational data on teacher teaching in cycle 1 and cycle 2.Table 1. Student mathematics learning outcomes in pre-cycle, cycle 1, and cycle 2.

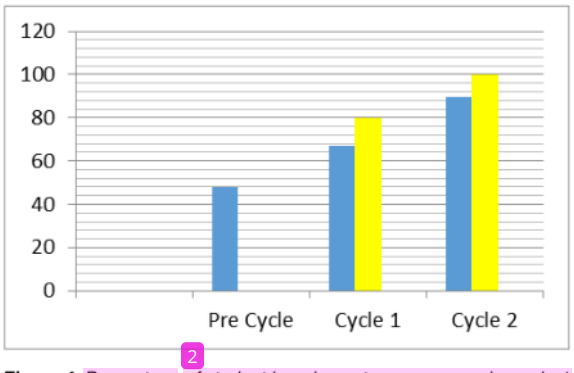

***Figure 4**. Percentage of student learning outcomes pre-cycle, cycle 1, cycle 2, and observations of teacher teaching in cycle 1 and cycle 2*

This research shows that the demonstration model can improve the learning outcomes of first-grade students in mathematics about reducing numbers in elementary school.
These results further support the idea of the Ekeyi [2] demonstration meth which shows that student achievement scores are higher in ASAT than their counterparts in the control group. Also, [17] also supports, he stated based on the results of formative tests which showed that the level of mastery of student learning outcomes on the concept of measurement using direct learning models had increased while as many as twenty-three students were categorized at very good and good levels.

5 CONCLUSION

This paper argues that the use of the demonstration model can significantly improve students 'understanding of mathematics, especially the topic of learning numbers (reduction) and can improve students' cognitive and involvement because students are invited to participate directly in learning accompanied by the help of learning media that are relevant to learning needs the student. This study set out to investigate the increased use of demonstration models for learning mathematics in low grades and to explore other positive effects of the application of demonstration models on the results of first-grade mathematics learning outcomes of elementary school students.From the data that has been analyzed in this class action research. The data obtained in the study are, from a total of 32 first-class students in one of the state elementary schools in South Tangerang, Banten Province, Indonesia, in the pre-cycle, students who received the Minimum Mastery Criteria (MMC) were 15 students or 48%. In cycle 1 there were 21 students or 67.2% who obtained MMC. In cycle 2 there were 28 students or 89.6% who got MMC. So the number of students who have obtained MMC scores continues to increase from cycle to cycle. Where the MMC score has increased from pre-cycle to cycle 2 with a total increase of thirteen students with a percentage of 41.6%. Then from this data, the students who had fulfilled the MMC score were twenty-eight students. This study aims to better understand that the use of demonstration learning models is proven to improve student learning outcomes.

6 ACKNOWLEDGMENT

We would like to thank the University of Muhammadiyah Jakarta for providing support for our research.

osfiani_et_al_2020_improving_student_mathematics_achieve...

ORIGINALITY REPORT

65%	54%	36%	19%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.ijstr.org Internet Source	25%
2	Okta Rosfiani, Cecep Maman Hermawan, Siti Maisaroh, Labib Romannada, Nur Fadillah Mawartika, Anwar Ilmar Ramadhan. "Collaboration on Involvement in Improving Science Learning Outcomes through Group Investigation", Journal of Physics: Conference Series, 2021 Publication	7%
3	journals.sagepub.com Internet Source	5%
4	Submitted to Reykjavík University Student Paper	3%
5	ijstr.org Internet Source	3%
6	Submitted to Waterford Institute of Technology Student Paper	2%

7	Mamata Chimmalgi. "Interactive Lecture in the Dissection Hall: Transforming Passive Lecture into a Dynamic Learning Experience", Anatomical Sciences Education, 2019 Publication	2%
8	Aep Saepuloh, Okta Rosfiani, CecepMaman Hermawan, Sutiawati, Mita Apriyana. "Teacher's Efforts to Enhance Students' Competence in Madrasah Ibtidaiyah in Science Skills and Academic Achievement", Journal of Physics: Conference Series, 2021 Publication	2%
9	Kristoph-Dietrich Kinzli, Tanya Kunberger, Robert O'Neill, Ashraf Badir. "A low-cost approach for rapidly creating demonstration models for hands-on learning", European Journal of Engineering Education, 2017 Publication	2%
10	eric.ed.gov Internet Source	2%
11	Submitted to Academic Library Consortium Student Paper	1%
12	Tristan Hann. "Investigating the impact of teacher practices and noncognitive factors on mathematics achievement", Research in Education, 2019 Publication	1%

13	Submitted to University of Canterbury Student Paper	1 %
14	files.eric.ed.gov Internet Source	1 %
15	pdfs.semanticscholar.org Internet Source	1 %
16	www.science.gov Internet Source	1 %
17	slideplayer.com Internet Source	1 %
18	Submitted to Far Eastern University Student Paper	1 %
19	hasanahummi.files.wordpress.com Internet Source	1 %
20	Submitted to University of Arizona Student Paper	1 %
21	Submitted to Eastern Gateway Community College Student Paper	1 %
22	silo.pub Internet Source	1 %
23	Moch. Bahak Udin By Arifin, Nurdyansyah, Ida Rindaningsih, Siti Kalimah. "Development of Smart Play Wheel Learning Media to Improve	<1 %

Student Learning Outcomes in Islamic Elementary schools", Journal of Physics: Conference Series, 2021
Publication

---

24 Rusi Rusmiati Aliyyah, Rasmitadila, Reza Rachmadtullah, Widyasari, Didi Mulyadi, Subaiki Ikhwan. "Using of student teams achievement divisions model (STAD) to improve student's mathematical learning outcomes", Journal of Physics: Conference Series, 2019 <1%
Publication

---

25 Eva Monika Nahulae, Zamtinah Zamtinah. "The effect of outdoor learning model on improving cognitive ability in entrepreneurial learning at the field of electricity", Journal of Education and Learning (EduLearn), 2020 <1%
Publication

---

26 P Wahyuni. "Implementation of Numbered Heads Together (NHT) type of cooperative learning to improve mathematical communication skills of eighth grade students of YKWI Pekanbaru MTs based on mathematical communication capability indicators", Journal of Physics: Conference Series, 2019 <1%
Publication

---

27 www.sciedu.ca
Internet Source

		<1%
28	Puji Lestari. "The Implementation of Demonstration Method in Area of A Triangle Learning at SDN 20 Delta Pawan", International Journal of Learning and Instruction (IJLI), 2020 Publication	<1%
29	garuda.ristekbrin.go.id Internet Source	<1%

Exclude quotes	On	Exclude matches	Off
Exclude bibliography	On		