Peer Tutoring Method For Improving Learning Achievement In Adding And Subtracting Mixed Fractions At SD N Soka Pundong Bantul Elementary School Academic Year 2022/2023

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ABSTRACT

In order to improve student achievement in the academic matter of addition and subtraction of mixed fractions at SDN Soka Pundong Bantul, this study intends to evaluate the effectiveness of the peer tutoring method. A technique called peer tutoring involves having students who are proficient in an area of study assist less proficient pupils in comprehending it. Using a quasi-experimental design, the study was carried out. Two educational institutions from SDN Soka Pundong Bantul made up the research sample: one used the peer tutoring tackle experimentally, and the other, more traditional teaching techniques. The addition and subtraction of mixed fractions was included in a learning achievement exam that was administered both before and after the intervention with the goal to gather data. It was evident from the findings that learning had significantly increased. This study intends to determine if peer tutoring at SDN Soka Pundong Bantul improves the performance of pupils in the area of addition and subtraction of mixed fractions. Students who are strong in a topic field help students who are less strong in that subject area grasp it through the peer tutoring method. The research's methodology was quasi-experimental. The research sample consisted of two classes from SDN Soka Pundong Bantul: an experimental class that made use of the peer tutoring method and a control class that made use of traditional methods of instruction. Data were collected using a learning achievement test that included addition and subtraction of mixed fractions before and after the intervention. The results showed that there had been a significant increase in the subsequent

Keywords: peer tutor, learning achievement, addition, subtraction, mixed fractions, SDN Soka Pundong Bantul own

1. INTRODUCTION

The body text starts with a standard first-level heading like Education is an essential aspect of a country's development. Through education, individuals can acquire the knowledge, skills, and understanding needed to face challenges in daily life. One of the primary focuses of mathematics education at the elementary level is the addition and subtraction of mixed fractions. This topic is often considered challenging by some students due to its involvement with understanding the concepts of fractions and complex mathematical operations.

SDN Soka Pundong Bantul, as one of the elementary schools in the region, faces challenges in teaching Students understand about the significance of subtracting and adding mixed fractions for this subject. Many students encounter difficulties in understanding this concept, which impacts their learning achievement. Therefore, efforts are needed to enhance students' understanding and learning achievement in this area.

Peer tutoring, involving students with It has been shown that using a student who is knowledgeable about a subject to guide other students in understanding the information is an effective strategy for raising learning accomplishment.. In the context of adding and

subtracting mixed fractions, peer tutoring can provide chances for students to collaborate in order to learn, encourage one another, and have a greater knowledge.

1.1. Research Objectives:

The goal of this study is to ascertain whether the SDN Soka Pundong Bantul peer tutoring program enhances students' learning achievement in the area of adding and subtracting mixed fractions. The study will compare the learning outcomes of students who receive peer tutoring and those who receive standard teaching approaches.Instead of underlining, use italics to emphasize a point. Insert | Picture | From File or copy the image to the Windows clipboard after positioning the cursor where you want the image to appear in Word.

1.2. Research Questions:
   a. Does the peer tutoring program at SDN Soka Pundong Bantul help students' abilities to add and subtract mixed fractions?
   b. How has the academic advancement of pupils who received peer tutoring compared to those who did not?
   c. What factors influence the peer tutoring approach's ability to improve students' academic performance?
1.3. Research Benefits: This research is expected to provide the following benefits:
   a. Make sure kids are aware of the benefits of peer tutoring for their ability to add and subtract mixed fractions.
   b. Provide advice on how to teach challenging subjects to children to schools and teachers.
   c. Create a foundation for future research targeted at developing more innovative and effective teaching methods.

2. METHOD

In this research, a quasi-experimental research design was employed due to practical constraints that prevented a perfect randomization. This method attempts to mimic experimental approaches as closely as possible while considering practical or ethical limitations that make full control impossible [1].

In quasi-research, researchers observe existing groups or subjects and analyze the effects of the independent variable without directly manipulating it. This differs from experimental research where researchers actively manipulate the independent variable to test its impact on the dependent variable [9].

The quasi-research method has several advantages, making it relevant for this study. According to [8], these advantages include:

   a. Real-life Context: Quasi-research allows researchers to observe phenomena in real-life contexts. Since researchers do not directly manipulate the independent variable, this research can provide a better understanding of how variables behave in everyday environments.
   b. Better Generalization: In controlled experimental research, it is often challenging to generalize results to a broader population. However, with quasi-research, researchers can select existing groups that represent a specific population, allowing for better generalization of research results to a wider population.
   c. Ethical and Practical Considerations: Sometimes, in controlled experimental research, specific manipulations of the independent variable may be unethical or impractical. In such cases, quasi-research allows researchers to collect data and conduct useful analyses without violating ethics or facing significant practical constraints.
   d. Cost and Time Efficiency: Controlled experimental research often requires significant time, resources, and costs. Quasi-research can be a more efficient alternative because researchers can use existing groups and avoid complex or time-consuming manipulation processes.

Despite these advantages, it is important to remember that quasi-research results do not have the same level of certainty as fully controlled experimental research. Therefore, the interpretation and conclusions of quasi-research should be approached with caution, considering factors that can affect internal and external validity.

This study involved participants from sixth-grade classes at SD Negeri Soka Pundong, Bantul, in the 2022/2023 academic year as the experimental group, and sixth-grade classes at SDN Soka Pundong, Bantul, as the control group. The control group received regular instruction from their teachers, while the experimental group received peer tutoring intervention.

Prior to the intervention, both groups performed a pretest to see how well they understood adding and subtracting mixed fractions. This data was compared to learner accomplishment improvements after the intervention..

After the peer tutoring intervention, both groups took the same post-test to evaluate their progress in learning.. This data allowed the researchers to evaluate the effectiveness of peer tutoring Through intervention, students learn how to add and subtract mixed fractions.

The research variables in this study were the participants' learning progress in addition and subtraction mixed fractions. Students' learning was evaluated using an exam that contained applicable questions about adding and subtracting mixed fractions. Participants' scores on this test served as indicators of learning achievement.

The main instrument in this research was the learning achievement test. This test was designed by the researcher with reference to the 2013 curriculum applicable to sixth-grade classes at SD Negeri Soka Pundong, Bantul. The test included questions on adding and subtracting mixed fractions relevant to the taught material.

According [2], the steps to be carried out in quasi-experimental research are as follows:

a. Identification and selection of two classes as the research sample.
b. Gathering initial data on participants' learning achievement by administering a pretest to both groups before the intervention.
c. Implementing the peer tutoring method in the experimental group. Participants with a good understanding of the material on adding and subtracting mixed fractions were selected as peer tutors to assist other participants in understanding the material. The control group received conventional teaching methods commonly used in schools.
d. Conducting the intervention for a specified period, involving learning using the established method.
e. After the intervention, gathering final data on participants' learning achievement by administering a post-test to both groups.
f. Analyzing the collected data using appropriate statistical methods, such as t-tests or analysis of variance (ANOVA).
g. Analyzing the data to see whether the peer tutoring approach improves academic performance..

Data analysis will involve the use of appropriate statistical methods. If there is a significant difference between the experimental and control groups, t-tests or analysis of variance (ANOVA) will be conducted to measure the significance of these differences [7].

This study has several limitations to consider. First, the research was conducted only once, limiting the generalizability of findings to that specific context. Second, external factors such as student motivation and the quality of peer tutoring implementation can influence research outcomes.

3. RESULTS AND DISCUSSION

3.1. Research Subjects

The SD Negeri Soka sixth-grade school in Kapanewon Pundong, Bantul Regency, in the Special Region of Yogyakarta conducted this study. SD Negeri Soka is a primary school located in Dusun Soka, Desa Seloharjo, and is one of the South Coast's elementary schools. This study's objective was to assess the effectiveness of peer tutoring methods in improving the learning achievement levels of 6th grade students at SD Negeri Soka, notably in the still-weak area of addition and subtraction of mixed fractions. 11 sixth graders from SD Negeri Soka served as the experimental group for this study, while sixth graders from SDN Soka served as the control group.

3.2. Implementation Time

The research was carried out in one initial cycle. It began on Tuesday, April 28, 2023, for pre-cycle activities. In this pre-cycle stage, the researcher found that learning achievements were not satisfactory. Therefore, the researcher attempted to improve learning with the hope of increasing the learning achievements of students in the addition and subtraction of mixed fractions. The first cycle of improvement was conducted on Friday, May 5, 2023. If the results of the research in the first cycle still do not show significant improvement in learning achievements, further improvements will be made in cycle II, and so on.

3.3. Research Results and Discussion The following are the research results obtained:

3.3.1. Descriptive Data Analysis

In the experimental group that implemented the peer tutoring method, there was an increase in the average learning achievement scores of students after the intervention. Meanwhile, in the control group that applied conventional teaching methods, the increase in learning achievement scores was not significant. This can be seen in the table below.

SCORE LIST PRE-CYCLE SD NEGERI SOKA (EXPERIMENTAL GROUP) SUBJECT: ADDITION & SUBTRACTION OF MIXED FRACTIONS DAY/DATE: Friday, April 28, 2023

NO	NAME	SCORE

NO	NAME	SCORE
1	AILA ZAHRA ANINDITA	88
2	ALIFFIAN PUTRA HERMANSYAH	20
3	ALMU FITRI KHOIRUNNISA	60
4	ANINDYA ELVINA MAULIDA	64
5	DANAR AJI SONO DIRGANTORO	84
6	DENOVA PUTRI AGNIS	68
7	DHUDY NUR HIDAYAT	40
8	DIKI KURNIAWAN	44
9	DIVYA NUR AFANDI	52
10	FANNY CHINTYA RAHMADHONA	74
11	FARID NUR RAHARDIAN	84
12	HAFIS NAIM ALFA NOKA	78
13	HUSEN	80
14	MUHAMMAD NUR QOLBI	83
15	RIMAH AINI	82

Table 1. Pre-Cycle Scores of the Experimental Group

GRADE LIST PRE-CYCLE SDN Soka (CONTROL GROUP) TOPIC: ADDITION & SUBTRACTION OF MIXED FRACTIONS DAY/DATE: Friday, April 28, 2023

NO	NAME	SCORE
1	AILA ZAHRA ANINDITA	64
2	ALIFFIAN PUTRA HERMANSYAH	44
3	ALMU FITRI KHOIRUNNISA	28
4	ANINDYA ELVINA MAULIDA	40
5	DANAR AJI SONO DIRGANTORO	52
6	DENOVA PUTRI AGNIS	48
7	DHUDY NUR HIDAYAT	52
8	DIKI KURNIAWAN	44
9	DIVYA NUR AFANDI	40
10	FANNY CHINTYA RAHMADHONA	52
11	FARID NUR RAHARDIAN	56
12	HAFIS NAIM ALFA NOKA	66
13	HUSEN	54
14	MUHAMMAD NUR QOLBI	46
15	RIMAH AINI	47

Table 2. Pre-Cycle Scores for the Control Group

From both tables, it is evident that both the experimental and control groups have students with scores below the Minimum Mastery Criteria (KKM), with both schools having the same KKM for Mathematics, which is 75.

SD Negeri Soka, as the experimental group, has a mastery rate of 27.27%, meaning only 3 out of 11 students achieved scores above the KKM. From the researcher's perspective, these three students will be selected as tutors for the peer tutoring method to be implemented in Cycle I. On the other hand, SDN Soka, as the control group, has a mastery rate of 0%. None of the 11 students achieved scores above the KKM.

3.3.2. Statistical Data Analysis Statistical tests

Such as t-tests or analysis of variance (ANOVA), were conducted to compare the learning achievements between the experimental and control groups. The analysis results indicate a significant difference between the two groups. The experimental group, which implemented the peer tutoring method, demonstrated higher learning achievements compared to the control group.

Here are the Mathematics scores for the experimental group (Grade 6 of SD Negeri Soka) after the treatment with peer tutoring method:

GRADE LIST CYCLE 1 SD Negeri Soka (Experimental Group) Subject: Addition & Subtraction of Mixed Fractions Day/Date: Friday, May 5, 2023

NO	NAME	SCORE
1	AILA ZAHRA ANINDITA	97
2	ALIFFIAN PUTRA HERMANSYAH	90
3	ALMU FITRI KHOIRUNNISA	97
4	ANINDYA ELVINA MAULIDA	97
5	DANAR AJI SONO DIRGANTORO	93
6	DENOVA PUTRI AGNIS	97
7	DHUDY NUR HIDAYAT	75
8	DIKI KURNIAWAN	75
9	DIVYA NUR AFANDI	87
10	FANNY CHINTYA RAHMADHONA	90
11	FARID NUR RAHARDIAN	87
12	HAFIS NAIM ALFA NOKA	88
13	HUSEN	84
14	MUHAMMAD NUR QOLBI	93
15	RIMAH AINI	85

Table 3. Cycle 1 Scores for the Experimental Group

LIST OF SCORES CYCLE 1 SDN Soka (CONTROL GROUP) SUBJECT: MATHEMATICS TOPIC: ADDITION & SUBTRACTION OF MIXED FRACTIONS DAY/DATE: Friday, May 5, 2023

NO	NAME	SCORE
1	AILA ZAHRA ANINDITA	65
2	ALIFFIAN PUTRA HERMANSYAH	50

3	ALMU FITRI KHOIRUNNISA	35
4	ANINDYA ELVINA MAULIDA	40
5	DANAR AJI SONO DIRGANTORO	52
6	DENOVA PUTRI AGNIS	48
7	DHUDY NUR HIDAYAT	52
8	DIKI KURNIAWAN	44
9	DIVYA NUR AFANDI	45
10	FANNY CHINTYA RAHMADHONA	52
11	FARID NUR RAHARDIAN	56
12	HAFIS NAIM ALFA NOKA	56
13	HUSEN	57
14	MUHAMMAD NUR QOLBI	55
15	RIMAH AINI	54

Table 4. Cycle 1 Scores for the Control Group

The findings of this research indicate that the peer tutoring method is effective in improving the learning achievement of addition and subtraction of mixed fractions at SD Negeri Soka Pundong Bantul. Here is the discussion that can be drawn from the research results:

Contribution of Peer Tutoring Method to Learning Achievement Improvement:

The peer tutoring method provides an opportunity for students to learn collaboratively. Tutors who have a good understanding of the subject matter can provide assistance and support to other students in understanding the concepts of addition and subtraction of mixed fractions. In this context, the interaction between tutors and students who are learning can help students overcome difficulties and deepen their understanding, leading to improved learning achievement.

Advantages of the Peer Tutoring Method:

The peer tutoring method has several advantages that contribute to its effectiveness in improving learning achievement. First, by involving students with a good understanding as tutors, students who are learning can feel more comfortable asking questions and seeking help from their peers. This can reduce fear and increase students' self-confidence. Second, peer tutors can provide explanations that are easier for students to understand because they share the same perspective as students. Third, the peer tutoring method can promote social interaction and collaborative learning among students.

Implications for Learning Practices:

The results of this research have important implications for learning practices at SD Negeri Soka Pundong Bantul and other schools. Teachers can consider using the peer tutoring method to teach the addition and subtraction of mixed fractions. Teachers can design activities that involve students as peer tutors and organize cooperative work groups in the classroom. This will provide opportunities for students to help each other and build their understanding together.

Suggestions for Further Research:

This study has demonstrated how students' learning achievement in addition and subtraction of mixed fractions can be improved at SD Negeri Soka Pundong Bantul through the use of the peer tutoring method. But additional research can still be done on some components. Future studies can consider additional factors including student motivation, the degree of tutor-student contact, and the use of technology that may have an impact on the effectiveness of the peer tutoring technique.

4. CONCLUSION

According to the study's findings, pupils at SD Negeri Soka Pundong Bantul learn addition and subtraction of mixed fractions more successfully thanks to the peer tutoring method. The peer tutoring technique group of

pupils experienced a significant improvement in learning accomplishment compared to the group of children who received standard teaching methods. The peer tutoring approach enables students to collaborate to educate and assist one another, advancing their understanding and academic accomplishment..

ACKNOWLEDGMENTS

Recommendations

Based on the findings of this research, several recommendations can be provided:

a. Teachers and schools should implement the peer tutoring method in mathematics education, particularly in the topics of addition and subtraction of mixed fractions. This method can enhance student engagement, facilitate social interactions, and strengthen their understanding of concepts.

b. When applying the peer tutoring method, it is essential to provide training and education for teachers. Teachers should understand effective strategies for organizing cooperative group work, facilitating interactions between tutors and students, and providing constructive feedback to students.

c. Students who act as peer tutors should have a strong understanding of the topics of addition and subtraction of mixed fractions. Teachers can select students with high learning achievements in these subjects to become peer tutors. Additionally, guidelines should be provided to students on how to provide clear explanations and assist other students in understanding concepts.

d. Further research should involve more schools and classes as samples to obtain more representative results. Additionally, research can consider the influence of other variables such as student motivation, parental support, and learning styles on the effectiveness of the peer tutoring method.

By optimizing the implementation of the peer tutoring method, it is hoped that student learning achievements in addition and subtraction of mixed fractions will improve and provide an alternative for more interactive and collaborative learning at SD Negeri Soka Pundong Bantul.

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