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APPLICATION OF THE CONTEXTUAL TEACHING AND LEARNING (CTL) MODEL WITH THE ASSISTANCE OF TRANSPARENT MIKA MEDIA TO IMPROVE THE LEARNING OUTCOMES OF CLASS V STUDENTS OF JAYALAKSANA 3 PUBLIC ELEMENTARY SCHOOL

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Abstract

This research is conducted by problems in the field that learning mathematics in the material of adding fractions in elementary schools only accentuates arithmetic and memorization skills which resulting in low student learning outcomes. The purpose of this study is to improve student learning outcomes through the application of the Contextual Teaching and Learning model assisted by transparent mika media. The research method used is Classroom Action Research Kemmis and Mc Taggart Models which consists of four step that is planning, implementing, observing, and reflecting. Data collection techniques were carried out by means of observation and written tests. The subjects of this study were fifth grade students at SDN 3 Jayalaksana with a total of 16 students. The material is about the operation of adding fractions. The results showed that there was an increase in student learning outcomes in the material for fraction addition operations. In the first cycle, the average student learning outcomes were 66, in the second cycle, the average student learning outcomes were 70, and in the third cycle, the average student learning outcomes were 80 with good predicate (B). Based on these results, it can be concluded that the application of the CTL model assisted by transparent mika media can improve the learning outcomes of fifth grade students in the fraction of addition.

Keywords: *Learning Outcomes, Transparent Mika Media, Contextual Teaching and Learning*

Abstrak

Penelitian ini dilatarbelakangi oleh permasalahan di lapangan bahwa pembelajaran matematika pada materi operasi penjumlahan pecahan di SD hanya menekankan kemampuan berhitung dan hafalan saja yang mengakibatkan hasil belajar siswa rendah. Tujuan dari penelitian ini adalah meningkatkan hasil belajar siswa melalui penerapan model Contextual Teaching and Learning berbantuan media mika transparan. Metode penilitian yang digunakan adalah Penelitian Tindakan Kelas Model Kemmis dan Mc. Taggart yang dilakukan sebanyak tiga siklus, dengan setiap siklusnya terdiri dari empat tahapan yaitu perencanaan, pelaksanaan, observasi, dan refleksi. Teknik pengumpulan data dilakukan dengan cara observasi dan tes tertulis. Subjek dari penelitian ini merupakan siswa kelas V SDN 3 Jayalaksana dengan jumlah siswa 16 orang. Materi tentang operasi penjumlahan pecahan. Hasil penelitian menunjukkan adanya peningkatan hasil belajar siswa pada materi operasi penjumlahan pecahan. Pada siklus I diperoleh rata-rata hasil belajar siswa 66, pada siklus II diperoleh rata-rata hasil belajar siswa 70, dan pada siklus III diperoleh rata-rata hasil belajar siswa 80 dengan predikan baik (B). Berdasarkan hasil tersebut, dapat disimpulkan bahwa penerapan model CTL berbantuan media mika transparan dapat meningkatkan hasil belajar siswa kelas V pada penjumlahan pecahan.

Kata Kunci: Hasil Belajar, Mika Transparan, Contextual Teaching and Learning

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INTRODUCTION

Learning mathematics in elementary school is very important because it has a big role in everyday life, especially in solving problems in students' real lives. This is in line with Soedjadi's opinion (Chisara & Hakim, 2018) that the objectives of learning mathematics are (1) to prepare students to be able to deal with changing circumstances and mindsets in life and in an ever-evolving world; and (2) preparing students to use mathematics and mathematical thinking in everyday life and in studying various sciences. Based on the goals of mathematics, learning mathematics is not required to have the ability to count only, but to be able to apply it in everyday life.

However, based on the conditions in the field, learning mathematics only emphasizes the ability to count without linking it to the real world of students. Thus, students are unable to apply it in everyday life and the knowledge gained is less meaningful which results in low student learning outcomes. This can be seen in the learning outcomes of class V students in the material for fraction addition operations.

Table 1. Class V student learning outcomes on fraction addition operations

KKM = 70

No.	Name	Value	Information	
			Graduated	Not Yet Graduated
1	S1	60		√
2	S2	50		√
3	S3	55		√
4	S4	80	√	
5	S5	70	√	
6	S6	70	√	
7	S7	60		√
8	S8	80	√	
9	S9	85	√	
10	S10	70	√	
11	S11	60		√
12	S12	60		√
13	S13	50		√
14	S14	60		√
15	S15	75	√	
16	S16	40		√
Average		64	7	9

Based on the table above, the learning outcomes of fifth-grade students on fraction addition operations material are low (below KKM), namely an average score of 64 from KKM 70. So in learning mathematics, especially in addition to operations material in grade V SD, there needs to be an innovation in learning.

Learning outcomes are a measure of the achievement of learning. So that when students have low learning outcomes, it is necessary to improve the learning process. This is in line with the opinion of Gagne and Briggs (Nurrita, 2018) that learning outcomes are a person's ability after participating in certain learning.

Fractions are material that is closely related to students' daily lives. For this reason, classroom learning must be able to bring student experience into learning. One of the learnings that relate to student experience is using the Contextual Teaching and Learning model.

This is in line with opinion (Kistian, 2018) states that the Contextual learning model is a learning concept that helps teachers relate the material taught to students' real-world situations and encourages students to make connections between the knowledge they have and its application in their lives as members of the family and society.. Ngalimun (Nasirudin dkk., 2019) states that the CTL model is a learning model that begins with presentation or oral questions and answers (friendly, open, negotiation) related to the real world of student life (daily life modeling) so that you will feel the benefits of the material presented, learning motivation appears, the world of mind students become concrete, and the atmosphere becomes conducive (comfortable) and fun. According to Trianto (Wahyuni, 2016) the seven components in contextual learning are 1) constructivism; 2) Ask (questioning); 3) Inquiry (inquiry); 4) Learning Community (learning community); 5) Modeling; 6) Authentic Assessment (authentic assessment). As for some of the advantages of the CTL model according to (Wahyuni, 2016) namely 1) learning is more meaningful and real; 2) Learning is more productive and able to strengthen students' concepts because the CTL learning method adheres to constructivism; 3) Contextual is learning that emphasizes student activity in full; 4) Classes in contextual learning are not as a place to obtain information, but as a place to test their findings in the field; 5) subject matter can be found by students themselves, not the result of teacher giving; 6) The application of contextual learning can create a meaningful learning atmosphere.

Related to the study above, one of the objectives of implementing the CTL model is to be able to concretize students' thoughts. So that learning mathematics can concretize students' thinking, it is necessary to have a media that is brought from students' daily lives and can be manipulated by students. This media is used so that students can easily understand the abstract fraction addition operation material. According to (Darmawati, 2015) One of the media that can be used to optimize students' understanding of fractional arithmetic operations, especially addition of fractions, is the use of concrete media such as transparent mica. Transparent mica

is a learning medium that can be used to concretize fractional forms into a physical model that can help students construct their mental schemes about fraction addition operations.

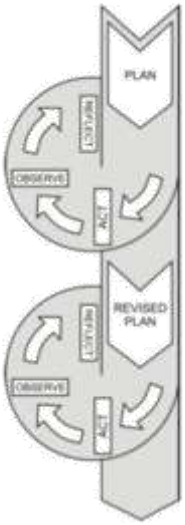
Relevant previous research was conducted by Nasrudin, et al entitled "The Effectiveness of the Contextual Teaching and Learning (CTL) Model on Mathematics Learning Outcomes in Fractional Materials". The results of a statistical analysis based on the t-test obtained t count > t table, namely 10 > 2.047. so, H0 is rejected and Ha is accepted. Thus, the CTL model is effective for improving mathematics learning outcomes in fractional material.

Based on statements regarding the low learning outcomes of fifth-grade students on fraction addition operations material and the results of previous research, the learning model that is considered appropriate to be used as an alternative solution to this problem is to use the "Contextual Teaching and Learning (CTL) Model assisted Transparent Mica Media".

METHOD

The research design used in this research is Classroom Action Research (CAR). This Classroom Action Research is used in class V as an effort to improve the learning process so that learning outcomes can be achieved optimally. According to Natawijaya (Syarifatunnisa & Kusdiana, 2015) classroom action research is an assessment of practical problems that are situational and contextual which are aimed at determining appropriate actions in the context of solving the problems encountered. This research was conducted at SD Negeri 3 Jayalaksana, Jayalaksana Village, Kedokanbunder District, Indramayu Regency. The subjects of this study were 16 fifth-grade students at SD Negeri 3 Jayalaksana.

The research design used in this CAR refers to the Kemmis and McTaggart models (Syarifatunnisa & Kusdiana, 2015). The design can be seen in the image below:



Picture 1
Classroom Action Research Design Model Kemmis and Mc. Taggart

Based on the table above, Kemmis and Mc. Taggart Classroom Resert model (Prihantoro & Hidayat, 2019) consists of four stages, namely planning (plan), implementation (action), observation (observe), and reflection (reflect). Thus, this research will be carried out in three cycles of action, each cycle containing the four stages. The data collection technique used is through observation and learning achievement tests.

RESULT

Classroom Action Research was carried out in three cycles, each cycle consisting of planning, implementing, observing, and reflecting. The results of this study are as follows:

Cycle I

This first cycle begins with action research planning. The planning of this study refers to the results of reflection on pre-learning activities, namely the results of the students' pretest. The results of the student pretest are as follows:

Table 2. Pre-action Class V Student Learning Outcomes
On the Material of Fractional Addition Operations

KKM = 70

No.	Name	Value	Information	
			Graduated	Not Yet Graduated
1	S1	60		√
2	S2	50		√
3	S3	55		√
4	S4	80	√	
5	S5	70	√	
6	S6	70	√	
7	S7	50		√
8	S8	80	√	
9	S9	85	√	
10	S10	70	√	
11	S11	60		√
12	S12	50		√
13	S13	50		√
14	S14	60		√
15	S15	80	√	
16	S16	40		√
Average		**63**	7	9

Based on the results of the pretest, showed that the average student learning outcome in the fractional addition operation material was 63, meaning that it was still below the KKM. So,

in this plan, the researcher began to improve the learning tools by compiling lesson plans following the KI and KD that had been set regarding the addition of fractions. In addition, the researcher provides transparent mica media that will be used by students, arranges post-test questions, and compiles observation sheets.

The second stage is the implementation of action research. The first cycle was held on Tuesday, October 18, 2022. The first cycle was held for 50 minutes (1 meeting). In the implementation of this action, the researcher acts as a teacher. The learning process is carried out according to the stages in the CTL model, namely Constructivist, Asking, Inquiry, Learning Communities, Modeling, and Authentic Assessment.

The third stage is Action Research observation. In this observation activity, the researcher is assisted by colleagues to observe during the learning process with the observation sheet that has been made by the researcher. The results of observations in the action research cycle I am as follows:

1. Observation results of the teacher's ability to make Learning Implementation Plans obtain an average of 75%
2. The results of observing the teacher's ability to carry out the learning process using the CTL model obtained an average of 67%
3. The results of observing students' activeness in using transparent mica media obtained an average of 67%
4. The results of observing the teacher's ability to manage the class obtained an average of 70%

The fourth stage is action research reflection. At this reflection stage, a posttest was carried out which aims to find out student learning outcomes in the fraction addition operation material after using the CTL model and transparent mica media. The results are as follows:

Table 3. Student Learning Outcomes of Class V Cycle I
Fractional Addition Operation Material

KKM = 70

No.	Name	Value	Information	
			Graduated	Not Yet Graduated
1	S1	60		√
2	S2	70	√	
3	S3	50		√
4	S4	80	√	
5	S5	70	√	
6	S6	70	√	
7	S7	50		√
8	S8	80	√	
9	S9	85	√	
10	S10	70	√	

11	S11	60		√
12	S12	70	√	
13	S13	50		√
14	S14	70	√	
15	S15	80	√	
16	S16	40		√
Average		**66**	10	6

Based on student learning outcomes in cycle I, namely obtaining an average of 66. Thus, there was an increase from the pretest scores of students who originally obtained an average of 63 with an increase percentage of 4.76%. However, student learning outcomes are still below the KKM. Thus, action research in cycle 1 was declared not successful. Therefore, there is a need for improvement to improve student learning outcomes in the next cycle of action research.

Cycle II

In cycle II, it is like cycle I, which begins with planning. The planning in cycle II is to improve the learning tools in cycle I. This planning starts with making lesson plans where learning activities contain the stages of the CTL model, CTL-based worksheets which are made interesting with lots of pictures, teaching materials which are made concise and clear, as well as posttest questions. made relevant to HOTS-based learning indicators.

The second stage is the implementation of action research. The second cycle was carried out on Tuesday, 01 November 2022. The second cycle was carried out for 50 minutes (1 meeting). In the implementation of this action, the researcher acts as a teacher. The learning process is carried out according to the stages in the CTL model, namely Constructivist, Asking, Inquiry, Learning Communities, Modeling, and Authentic Assessment.

The third stage is Action Research observation. In this observation activity, the researcher is assisted by colleagues to observe during the learning process with the observation sheet that has been made by the researcher. The results of observations in action research cycle II are as follows:

1. Observation results of the teacher's ability to make Learning Implementation Plans obtain an average of 80%
2. The results of observing the teacher's ability to implement the learning process using the CTL model obtain an average of 75%
3. The results of observing students' activeness in using transparent mica media obtained an average of 75%
4. The results of observing the teacher's ability to manage the class obtained an average of 80%

The fourth stage is action research reflection. At this reflection stage, a posttest was carried out which aims to find out student learning outcomes in the fraction addition operation material after using the CTL model and transparent mica media. The results are as follows:

Table 4. Student Learning Outcomes of Class V Cycle II
Fractional Addition Operation Material

KKM = 70

No.	Name	Value	Information	
			Graduated	Not Yet Graduated
1	S1	70	√	
2	S2	70	√	
3	S3	60		√
4	S4	80	√	
5	S5	70	√	
6	S6	70	√	
7	S7	65		√
8	S8	80	√	
9	S9	85	√	
10	S10	70	√	
11	S11	70	√	
12	S12	70	√	
13	S13	50		√
14	S14	70	√	
15	S15	80	√	
16	S16	55		√
Average		**70**	12	4

Based on student learning outcomes in cycle 2, namely obtaining an average of 70. Thus, there is an increase in student learning outcomes which originally obtained an average of 66 with a percentage increase of 6%. Student learning outcomes have indeed reached the KKM. However, it is necessary to increase again because the average student learning outcomes are the same as the KKM so an average of 70 is still classified as Enough (C). Thus, action research in cycle 2 still needs to be maximized. Therefore, there is a need for improvement to improve student learning outcomes in the next cycle of action research.

Cycle III

In cycle III, it is like the previous cycle, which begins with planning. The planning in cycle III is to improve learning tools in cycle II. This planning starts with making lesson plans where learning activities contain the stages of the CTL model, CTL-based worksheets which are made interesting with lots of pictures, teaching materials that are made concise and clear, preparing concrete media in the form of white bread to stimulate students, preparing transparent mica media, and questions. posttest made relevant to HOTS-based learning indicators.

The second stage is the implementation of action research. The third cycle was carried out on Tuesday, November 15, 2022. The third cycle was carried out for 50 minutes (1 meeting). In the implementation of this action, the researcher acts as a teacher. The learning process is carried out according to the stages in the CTL model, namely Constructivist, Asking, Inquiry, Learning Communities, Modeling, and Authentic Assessment.

The third stage is Action Research observation. In this observation activity, the researcher is assisted by colleagues to observe during the learning process with the observation sheet that has been made by the researcher. The results of observations in action research cycle 3 are as follows:

1. Observation results of the teacher's ability to make Learning Implementation Plans obtain an average of 90%
2. The results of observing the teacher's ability to carry out the learning process using the CTL model obtained an average of 85%
3. The results of observing students' activeness in using transparent mica media obtained an average of 88%
4. The results of observations of the teacher's ability to manage classes obtained an average of 88%

The fourth stage is action research reflection. At this reflection stage, a posttest was carried out which aims to find out student learning outcomes in the fraction addition operation material after using the CTL model and transparent mica media. The results are as follows:

Table 5. Student Learning Outcomes of Class V Cycle III
Fractional Addition Operation Material

KKM = 70

No.	Name	Value	Information	
			Graduated	Not Yet Graduated
1	S1	80	√	
2	S2	85	√	
3	S3	80	√	
4	S4	80	√	
5	S5	90	√	
6	S6	80	√	
7	S7	70	√	
8	S8	85	√	
9	S9	90	√	
10	S10	80	√	
11	S11	85	√	
12	S12	90	√	

13	S13	60		√
14	S14	85	√	
15	S15	80	√	
16	S16	65		√
Average		**80**	14	2

Based on student learning outcomes in cycle III, namely obtaining an average of 80. Thus, there was an increase in student learning outcomes which originally obtained an average of 70 with an increase percentage of 14.29%. The number of students who completed was 14 students and those who had not completed were 2 students out of a total of 16 students. So, based on student learning outcomes in cycle III, the learning process using the CTL model assisted by Transparent Mika media can improve student learning outcomes in the material of Fractional Addition Operations with an average value of 80 which has a Good predicate (B).

As for the increase in student learning outcomes after using the CTL model assisted by transparent mica media, it can be seen in the learning outcomes in cycles I, II, and III as follows:

Table 6. Research results of cycles I, II, and III

No	Aspect	Percentage of Cycle I	Percentage of Cycle II	Percentage of Cycle III	Information
1	Learning Planning	75 %	80 %	90 %	Increase
2	Implementation of the CTL Model	67 %	75 %	85 %	Increase
3	Student activity	67 %	75 %	88 %	Increase
4	Student Learning Completeness	62 %	75 %	88 %	Increase

While the increase in the average value of student learning outcomes during cycles I, II, and III can be explained in the following diagram:

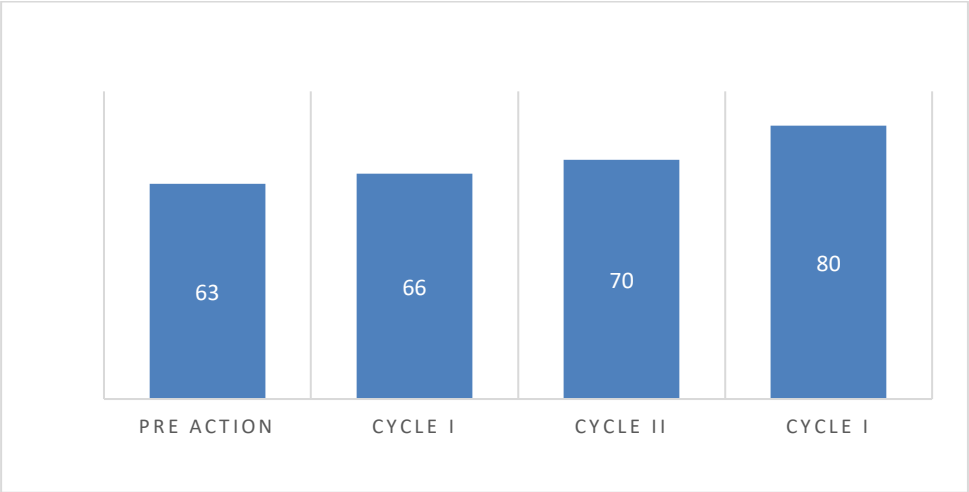


Diagram 1. Average student learning outcomes

on the bar chart above, it can be explained that the average value of students in pre-action was 63, in cycle I was 66, in cycle II was 70 and in cycle III was 80. As for the increase in the average value of student learning outcomes if explained in percentage there the increase in learning outcomes was 4.76% in cycle I, the percentage increase in student learning outcomes from cycle I to cycle II was 6%, and the percentage increase in student learning outcomes from cycle II to cycle III was 14.29%. It can be concluded that the use of the Contextual Teaching and Learning Model assisted by Transparent Mica Media can improve the learning outcomes of Class V students in the material of Fractional Addition Operations.

DISCUSION

This study aims to determine whether or not there is an increase in student learning outcomes on the material for fraction addition operations using the Contextual Teaching and Learning model assisted by Transparent Mika Media.

This research went well from pre-action activities, cycle I, cycle II, to cycle 3. This is inseparable from the learning tools that have been made. According to Nazaruddin (Salim Nahdi & Cahyaningsih, 2018) that the learning device is a preparation prepared by the teacher so that the implementation and evaluation of learning can be carried out systematically and obtain results that are per expectations. Therefore, (Salim Nahdi & Cahyaningsih, 2018) said that teachers as designers of learning activities must be skilled in developing appropriate learning tools in order to help students achieve competency. Related to this, based on the results of observations in this study there was an increase from each cycle regarding the devices that had been made. This can be seen in the percentage of manufacture based on observation results, the first cycle is 75%, the second cycle is 80%, and the third cycle is 90%.

Apart from the devices that have been made, the implementation of the CTL model itself helps students in the learning process on fraction addition operations material. Because the use

of the CTL model makes students active. This is in line with Pratiwi's opinion (Kamilah & Ruqoyyah, 2022) that using the Contextual Teaching and Learning (CTL) model will create active students, and students will be more responsible for what is learned. This liveliness is inseparable from the learning stages of the CTL model itself, according to Taranto (Wahyuni, 2016) the seven components in contextual learning are 1) constructivism; 2) Ask (questioning); 3) Inquiry (inquiry); 4) Learning Community (learning community); 5) Modeling; 6) Authentic Assessment (authentic assessment).

The use of media is a support to help students understand a fraction concept. With the CTL model assisted by transparent mica media, it can make students active. As for the results of observations related to student activity in the use of transparent mica media, it has increased in each cycle. This transparent mica media can bridge students to concretize abstract things. The material for adding fractions is abstract, so to help students need media. This is in line with the opinion of (Darmawati, 2015) namely, one of the media that can be used to optimize students' understanding of the material for calculating fractions, especially adding fractions, is the use of concrete media such as transparent mica.

The success of a learning process can be seen from the achievement of a learning. The achievement of a learning can be seen from the results of student learning. This is in line with the opinion of Gagne and Briggs (Nurrita, 2018) that learning outcomes are a person's ability after participating in certain learning. Based on the results of observations on the planning and implementation processes that have been going well, then with an increase in each cycle, student learning outcomes also increase. The average learning outcomes in cycle I was 66, cycle II was 70, and cycle III was 80. So that the use of the Contextual Teaching and Learning Model assisted by Transparent Mika Media can improve student learning outcomes in Class V on Fractional Addition Operations.

The previous research that is relevant to this research is the research conducted by Nasrudin, et al entitled "The Effectiveness of Contextual Teaching and Learning (CTL) Models on Mathematics Learning Outcomes in Fractional Materials". The results of a statistical analysis based on the t-test obtained t count > t table, namely 10 > 2.047. so, H0 is rejected and Ha is accepted. Thus, the CTL model is effective for improving mathematics learning outcomes in fractional material.

CONCLUSION

Based on the results of research on the learning process using the Contextual Teaching and Learning Model assisted by transparent mica media on the material for the addition of fractions in class V SD, it can be concluded as follows:

1. There is an increase in student activity in using transparent mica media, namely cycle I with a percentage of 67%, cycle II with a percentage of 75%, and cycle III with a percentage of 88%
2. The use of the CTL model assisted by transparent mica media can improve student learning outcomes, namely cycle I with an average learning outcome of 66, cycle II with

an average learning outcome of 70, and cycle III with an average learning outcome of 80.

3. Transparent mica media can help students instill the concept of adding fractions with different denominators

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