
EFFORTS TO IMPROVE UNDERSTANDING OF WHOLE NUMBER OPERATIONS THROUGH APPLICATION OF CONTEXTUAL TEACHING AND LEARNING (CTL) TO CLASS III STUDENTS OF MIN DARUN NAJAH SUNGAI PANDAN

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Article history: received 00 0000000 0000; revised 00 0000000 0000; accepted 00 0000000 0000

Abstract

The problem that is often experienced by elementary school students is the difficulty in performing whole number operations. The use of textbooks from the government and LKS only contains routine questions that only develop students' knowledge and speed in arithmetic but have not developed their critical and creative thinking skills. The impact of the use of these teaching materials is that students have difficulty understanding the whole number material. The purpose of this study is to improve mathematics learning outcomes in counting operations for class 3 students at MINU Darun Najah, to find out how the CTL (contextual teaching and learning) approach can improve mathematics learning on whole number operations. This classroom action research uses the subject and research setting for class 3 odd semesters for the 2022/2023 academic year MINU Darun Najah Sungai Pandan Alabio. Based on the analysis of the results of observations of actions and discussions, it can be concluded that by using the CTL approach (Contextual Teaching and learning) the results of learning mathematics in whole number operations material have increased in quality, this learning technique is in accordance with the way of learning desired by students, this learning model is in accordance with the atmosphere Independent learning stimulates the creativity and activeness of students because it can connect learning with the natural surroundings.

Keywords: Comprehension, Whole Number Operations, CTL (Contextual Teaching and Learning)

INTRODUCTION

In the process of learning mathematics, there are main activities, namely learning for students and teaching by teachers. Students learn because they want to achieve good results or grades, while teachers teach because they want to see students get better learning outcomes. James O. Whittaker defines learning activities as a process in which behavior is generated or changed through practice or experience. ¹ Learning is a series of mental and physical activities to obtain a change in behavior as a result of individual experiences in interactions with their environment involving cognitive, affective, and psychomotor. The benefits of learning in learning are processing brain function so it doesn't freeze to avoid stupidity, diligent study makes smart because in learning we get broad insights so we don't get left behind by science and technology. In learning can raise the degree and dignity so as not to be looked down upon by others. The benefits of learning itself will result in achievements, it will not be difficult to make friends, will have more knowledge besides that it will be needed by many people. Someone who continues to learn will achieve success, get calm and increase self-confidence and not feel inferior, will not be outdated and ignorant. By learning can bring other luck.

Learning outcomes are learning outcomes of an individual interacting actively and positively with his environment. According to Oemar Hamalik, learning outcomes are when someone has learned there will be a change in behavior in that person. Furthermore, Winkel stated that learning outcomes are an internal ability that has become a person's personal property and the possibility of that person doing something according to his abilities. From the above understanding it can be

¹ Afi Parnawi, *Psikologi Belajar*, Deepublish, 2019, h.1.

concluded that learning outcomes are the results given to students in the form of an assessment after following the learning process by assessing the knowledge, attitudes, skills of students with changes in behavior.²

Mathematics is the science of logic, numbers, and space, along with operational procedures that connect logic, numbers, and space (Big Indonesian Dictionary). James and James (Ruseffendi, 1996: 42) in their mathematical dictionary quoted by Ruseffendi explain that mathematics is the science of logic about form, arrangement, quantity and concepts that are interconnected with each other in large numbers divided into three fields, namely algebra, analysis, and geometry. Mathematics is one component of a series of subjects that have an important role in education (Sundayana, 2015: 2). According to Johnson and Myklebust (in Sam's 2010:11) mathematics is a symbolic language whose practical function is to express quantitative and spatial relationships while its theoretical function is to facilitate thinking. From several understandings, it can be concluded that mathematics is a science that studies logic regarding form, arrangement, magnitude, and concepts related to one another. Mathematics is a science that is based on mathematical developments in the fields of number theory, algebra, analysis, probability theory, and discrete mathematics and is related to reasoning. Mathematics can be learned with everyday life. The characteristics of mathematics are having axioms, definitions, lemmas, theorems, and involving number operations. The truth is maintained consistency. The concept of discussion is tiered from simple things to more complex things. Requires logical reasoning. Emphasizing deductive thinking patterns, but in the process of learning and understanding sometimes it begins with facts or examples in the field which are then made mathematical conclusions, inductive-deductive. In some subjects, it is applied to other scientific fields and everyday life.

According to Kasmawati (2017) our world of education should have a model or standard system that can be applied to students that is universally applicable and does not change, so that it is able to provide aspects of continuity and certainty of learning. That way, at the next level, their academic achievements, abilities, and the world of education globally will increase significantly. In the opinion of Johnson Elaine B (2014: 57) CTL is a teaching system that matches the brain because it produces meaning by connecting academic content with the context of students' daily lives. The Ministry of National Education in (Sumiyati 2011: 14) CTL (Contextual Teaching Learning) is a learning concept that helps teachers relate the learning materials taught to students' real-world situations and encourages students to make connections between their knowledge and its application in their daily lives. Based on the opinion of experts, it can be concluded that (Contextual Teaching Learning) is a teaching system that produces a relationship between academic content and everyday contexts related to the real world. According to Zulaiha (2016) CTL is one of the learning models associated with a competency-based curriculum and is quite relevant to be applied in schools. CTL is a learning concept in which the teacher presents real-world situations in the classroom and encourages students to make connections between the knowledge possessed and its application in life, while students gain knowledge little by little, and from the process of constructing themselves, as a provision to solve problems in their lives. According to Hasibuan (2014) the contextual learning model (Contextual Teaching and Learning) is a holistic learning process and aims to help students understand the meaning of teaching materials and relate them to the context of their daily lives (personal, social and cultural contexts), so that students have the knowledge / dynamic and flexible skills to actively construct their own understanding. According to Sabekti (2016) Contextual Teaching and Learning (CTL) learning is a learning strategy that emphasizes the process of involving students to get and find between the material to be studied with the reality of their real life, so that students are encouraged to apply the learning process into everyday life. -their day.

Several experts put forward a definition of the CTL learning method. According to Sanjaya (2006), CTL is a teaching and learning strategy that emphasizes the process of full student

² Teni Nurrita, "Pengembangan Media Pembelajaran Untuk Meningkatkan Hasil Belajar Siswa" *MISYKAT: Jurnal Ilmu-ilmu Al-Quran, Hadist, Syari'ah dan Tarbiyah* 3, no. 1 (27 Juni 2018): h.175.

involvement to be able to find the material being studied and relate it to real life situations so as to encourage students to be able to apply it in their lives. From the CTL concept, there are three things that must be understood. First, CTL emphasizes the process of student involvement to find material, meaning that the learning process is oriented to the process of direct experience. The learning process in the context of CTL does not expect students to only receive course material, but the process of seeking and discovering their own knowledge. Second, CTL encourages students to find the relationship between the material being studied and real-life situations, meaning that students are required to be able to capture the relationship between learning experiences and real life. This is very important, because by being able to correlate the material found with real life, not only for students the material will be functionally meaningful, but the material learned will be firmly embedded in students' memory, so it will not be easily forgotten. Third, CTL encourages students to be able to apply it in life, meaning that CTL not only expects students to understand the material they are learning, but how the subject matter can color their behavior in everyday life. The subject matter in the context of CTL is not to be piled up in the brain and then forgotten, but as a provision for them to navigate real life.

The overall characteristics describe the condition of students who are the subject of learning with the CTL method. New concepts that will be taught should be presented in real life that is familiar to students, and is considered important in their future lives. Students are also invited to obtain and analyze their own data as they are guided to find an important concept. In these activities, students are encouraged to participate actively to improve their communication skills. Based on the overall characteristics above, the characteristics of learning with the CTL approach can be briefly presented as follows: 1) new concepts are built from real and contextual situations for students with what they already know; 2). Students are given the opportunity to collect and analyze their own data; students are guided to find important concepts from data collected by themselves; 4). Each student actively participates in his work group; 5). The process of data collection, data analysis and the concepts it builds encourage students to think about it in applications with actual problems.³

(process and outcome) through various tools and types of assessment. Contextual Approach is also called Contextual Teaching Learning (CTL), the purpose of implementing and approaching Contextual Learning is to improve student achievement through increasing understanding of the meaning of the subject matter being studied by linking the material being taught to the context of students' daily lives (personal, social, contextual contexts). culture, and so on). Thus students have knowledge, attitudes, and skills that can be flexibly applied from one problem/context to another. The basis of thinking used in contextual learning, namely that knowledge is built by humans little by little whose results are expanded through a limited context. Students are accustomed to solving problems, finding something useful for themselves, while the teacher facilitates the process by: (a) Making knowledge meaningful and relevant. (b) Provide opportunities for students to find and apply their own ideas. The CTL learning model has several objectives, including: to motivate students to understand the meaning of the subject matter they are studying by linking the material to the context of their daily lives so that students have knowledge or skills that can reflect reflection on other problems. This learning model aims that in learning it is not just memorizing but it is necessary with understanding. This learning model emphasizes the development of students' experiential interests; Train students to be able to think critically and skillfully in processing knowledge in order to find and create something useful for themselves and others; To make learning more productive and meaningful; To invite children to an activity that relates academic material to the context of everyday life; So that students individually can find and transfer complex information and students can make the information their own.

a. The application of contextual learning in the classroom involves seven main effective learnings, namely: Constructivism (constructivism) Knowledge is built by humans little by little, the

³ Husni Sabil, "Penerapan Pembelajaran Contextual Teaching & Learning (CTL) Pada Materi Ruang Dimensi Tiga Menggunakan Model Pembelajaran Berdasarkan Masalah (MPBM) Mahasiswa Program Studi Pendidikan Matematika FKIP UNJA," *Edumatica : Jurnal Pendidikan Matematika*, 15 April 2011, h. 46-47.

results of which are expanded through a limited context. Knowledge is not a set of facts, concepts, which are ready to be retrieved and remembered. Humans must construct that knowledge and give meaning through real experience. Students must find and transform complex information into other situations, and if desired the information becomes their own.

b. Finding (inquiry) This means that in contextual learning, the discovery of a new concept or knowledge from the process that is carried out by the students themselves.

c. Asking (questioning) In learning, many questions must appear to lead students to find new concepts.

d. Learning Community In contextual learning, a learning community must be created, students learn in groups to work together.

e. Modeling The learning of certain skills has a model that is imitated. In the form of how to operate something, the teacher is not the only model. Models can be designed by involving students. The model can be imported from outside, the model is used as a medium in the learning, especially in the field of skills.

f. Reflection means that the concepts/knowledge that have been found can be reflected (backwards or forwards) so that they have meaning in students' lives.

g. Actual assessment (authentic assessment) Contextual learning must be based on existing facts (process and results) through various tools and types of assessment.

The basic principle of contextual learning is that students can develop their own way of learning and always relate it to what is already known and what is in the community, namely applications and concepts learned. The principles of contextual learning in detail are as follows:

a. Emphasis on problem solving.

b. Recognizing teaching activities occur in various contexts such as home, community, and workplace.

c. Teaching students to monitor and direct their learning so that it becomes active and controlled learning.

d. Emphasizing learning in the context of student life.

e. Encourage students to learn from one another and learn together.

f. Using authentic assessment.

Contextual learning helps students in 3 ways, namely:

a. Knowledge, namely what is in his mind to form concepts, definitions, theories, and facts.

b. Competence or skills, namely the ability possessed to act or something that can be done.

c. Contextual understanding, which is knowing when and how to use knowledge and skills in real-life situations.

School mathematics implies that mathematics and its mindset are adapted to the student's ability to process. Although school mathematics has abstract objects, teaching can start from concrete objects, the core areas of study of elementary school mathematics include numbers, geometry and measurement, and data processing. The scope of math material for class IV even semesters as the material in this study is Fraction Counting Operations which includes addition and subtraction story problems on whole numbers.

The results of learning mathematics on whole number operations material obtained by students are the results obtained by students after carrying out tests on whole number operations material which are carried out after students follow the learning process on whole number operations material. Evaluation is carried out in writing in the form of objective questions. The results of this study can be used as an indicator of the success or failure of a learning.

Based on the daily test of Mathematics subject matter of whole number operations, it shows that out of 16 students, only 10 students scored above the KKM (≥ 65) meaning that only 70% had completed, and the remaining 6 students had not reached the KKM, meaning 30% had not completed the score (65). The average grade of 65. Students who have not completed due to classroom management that is not controlled by the teacher, Low learning outcomes are due to students' understanding of the concepts in whole number material, children's lack of interest in learning

mathematics, Teachers have not used teaching aids/media in In learning, the method used is in the form of lectures that are boring.

METHOD

This research was conducted at MINU Darun Najah Sungai Pandan Class III, Hulu Sungai Utara Regency, with 16 students. This research activity was carried out in July 2022. The research data collected were (1) learning tools made by teachers; (2) Resource Books; (3) Observation Results. The techniques used to collect data are tests, and observations/observations and documentation. Items of tools for test techniques, guidelines and observation sheets for non-test/observation techniques, cellphones for documentation techniques. The CTL (Contextual Teaching And Learning) learning approach is said to be effective for improving mathematics learning outcomes if students can achieve the predetermined KKM of 65 and the percentage of classical completion is at least 75% (at least 75% of students who score 65).

The implementation in this study uses the Classroom Action Research method, each cycle consisting of 4 stages, namely:

1. Cycle I

a. Planning (Planning)

Which includes: (1) compiling a grid of questions, (2) compiling a lesson plan (RPP), (3) making learning worksheets, (4) preparing learning media, (5) compiling daily test questions, (6) preparing instruments observation.

b. Implementation and Observation

Which includes the steps: (1) creating a study group consisting of 4 students, (2) doing daily tests. Observation of the implementation of learning is carried out in collaboration with colleagues by using monitoring tools in the form of instruments that have been planned. At the end of the first cycle the teacher conducted interviews with students. Validation of the results is done by triangulation of students, teachers and peers.

c. Reflection (Reflecting)

Which includes analyzing quantitative and qualitative data from observations with existing instruments. The results of the analysis are used to see the results of both positive and negative actions and to determine the follow-up to the next cycle. Reflection is done by using comparative descriptive analysis, which is to compare the results of observations of the initial conditions with the results of observations in the first cycle.

2. Cycle II

a. Planning (Planning)

At this stage include: (1) identification of problems in cycle I and improvement plans, (2) compiling RPP LKS Learning of whole numbers, (3) identification of problems for discussion carried out in the same way as cycle I. However, efforts are needed to further increase student activity and explore problems with students and teachers, (4) arrange tests.

b. Implementation (Acting)

The learning process in this cycle is the same as the first cycle and is an improvement from the first cycle and all the weaknesses that arise during the implementation of the first cycle are corrected in this second cycle. This improvement is intended to foster student activity in learning, at the beginning of cycle II students still need to be explained about learning whole numbers.

c. Data Collection (Observation)

At this stage, the same as the first cycle of data that is considered important, such as data on the progress of learning outcomes and data on learning activities that are monitored through class observation sheets, student observations and student work results.

d. Reflection (Reflecting)

Reflection in cycle II is focused on the experience gained from cycle I, reassessing the set improvement targets. Reflection is done by using comparative descriptive analysis, namely by

comparing the results of the observations in the first cycle with the results of the observations in the second cycle.

RESULTS AND DISCUSSION

1. Meeting in Cycle 0/Initial State/Pre Cycle

1. The average value in the initial cycle, regarding the operation of whole numbers is 65, 6 students have not completed and 10 students have completed.

2. Based on the results of the initial cycle observations on students' abilities in the standard operating competence of whole numbers, the researchers sought classroom action to achieve learning objectives and achieve the Minimum Completeness Criteria (KKM) of 65.00.

2. Meeting in Cycle I

1. The average score of the first cycle of the post-test on the arithmetic addition of fractions is 80 out of 16 students, 6 students have not completed and 10 students have completed.

2. These results indicate that there has been a development or improvement in students' abilities in learning the basic competencies of arithmetic addition operations.

3. Meeting in Cycle II

1. The average score of the second cycle test post is 80, from 16 students all completed.

2. These results show that students already have the ability to master the basic competence of fractional addition arithmetic operations marked by the average value of the test post which is already above the Minimum Completeness Criteria (KKM) and has shown a fairly high percentage of students.

CONCLUSION

Based on the analysis of the discussion presented above after the Classroom Action Research was conducted, it can be concluded that by applying the steps of the CTL (contextual teaching and learning) approach to mathematics learning for the third grade students of MINU Darun Najah in counting operations, student learning outcomes can be increased. The steps of the CTL (contextual teaching and learning) approach can stimulate students' thinking power and perseverance and enthusiasm in working on counting numbers and train students to think coherently and systematically, as well as increase teacher performance results in teacher professional competence. By using the CTL (Contextual Teaching) approach and Learning makes it easier for students to understand problems in the material of counting operations that are still abstract. Teachers are expected to use modeling techniques more often and empower teaching aids, also accompanied by worksheets so that learning can be more meaningful both for students and for students. teacher as educator.

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