



## Improving Student Learning Outcomes in Mathematics Learning through a Contextual Teaching and Learning Approach in Elementary Schools

Laina Misqa ✉, Universitas Islam Negeri Ar-Raniry Banda Aceh, Indonesia

Wati Oviana, Universitas Islam Negeri Ar-Raniry Banda Aceh, Indonesia

Zikra Hayati, Universitas Islam Negeri Ar-Raniry Banda Aceh, Indonesia

Misbahul Jannah, Universitas Islam Negeri Ar-Raniry Banda Aceh, Indonesia

✉ 190209119@student.ar-raniry.ac.id

**Abstract:** Learning mathematics is one of the lessons that must be mastered by students. To a certain extent, mathematics can help students overcome various problems in everyday life. This research aims to improve student learning outcomes in mathematics learning by applying the Contextual Teaching and Learning approach. This research is classroom action research. The subjects in the research were students of class V-3 MIN 7 in Banda Aceh City, totaling 49 students. Data collection techniques were carried out using observation and test techniques. The data obtained was then analyzed using descriptive statistical techniques. Learning outcome data is analyzed based on the standard value set, namely 80 with classical completeness of 90%. The results showed that teacher activity in the first cycle increased to 75% in the good category. Furthermore, in the second cycle, it was 84.37% in the very good category, and increased again in the third cycle, namely to 94.79% in the very good category. Meanwhile, student activity in the first cycle was 71.87% in the good category, in the second cycle it increased to 82.29% in the very good category, and increased again in the third cycle to 92.70% in the very good category. The increase in learning outcomes in the first cycle was 65.3% in the sufficient category. Then it increased in the second cycle to 81.63% in the very good category, and increased again in the third cycle to 93.87% in the very good category. So it can be concluded that the application of the Contextual Teaching and Learning approach can increase teacher activity, student activity and student learning outcomes in class V MIN 7 Banda Aceh City.

**Keywords:** learning outcomes, mathematics learning, contextual teaching and learning.

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### INTRODUCTION

Education is an effort to advance children's character, mind and body, so that they can advance the perfection of life, namely living and bringing children to life in harmony with nature and society (Pane & Dasopang, 2017; Santrock, 2011; Wolfolk, 2016). Basically, education is an effort to develop the potential of human resources or students by encouraging and realizing learning activities in students (Schunk, 2012). Increasing,

mastering, utilizing, developing knowledge, attitudes and skills is one of the goals that is highly desired by every individual (Fatwa et al., 2024; Lubis, 2019; Silvia et al., 2023). To achieve this goal, the government and the educational community are making various efforts at various levels of education in accordance with the nationally implemented curriculum where the curriculum contains various subjects including mathematics (Fatwa et al., 2023; Lubis et al., 2021).

Mathematics is one of the main subjects that must be taught at both primary and secondary education levels. This is stated in Republic of Indonesia Law no. 20 of 2003 concerning the National Education System Article 37 paragraph which explains that the Primary and Secondary Education Curriculum must contain; Religious Education, Citizenship Education, Language, Mathematics, Natural Sciences, Social Sciences, Arts and Culture, Physical Education and Sports, Skills/vocational and local content.

Mathematics is a science that has very broad applications in aspects of life, because many problems in everyday life must be solved with mathematics (Mujib, 2019). In accordance with the aim of providing mathematics subjects in schools, we can see that mathematics subjects in schools play a very important role. Students need mathematics as a solution to solve problems (Acharya, 2017), one of which is fraction material. Problems with fractional materials are often encountered in everyday life. For example, in a family there are 3 family members, in that family there is one pomegranate, so that all family members can taste the pomegranate fairly and equally, they must divide it using fractions, namely dividing a pomegranate into three parts, so that each -Each family member will get  $\frac{1}{3}$  of the pomegranate equally. Fractions can be interpreted as parts of something whole. In image illustrations, the part in question is the part that is being considered, which is usually marked with shading. This part is called the numerator. The whole part is the part that is considered as a unit, and is called the denominator.

Based on the results of observations and interviews conducted by researchers with mathematics teachers in class V-3 of MIN 7 Banda Aceh City, it shows that there are still students who do not understand the material on calculating operations for adding fractions with unequal denominators and the material on adding mixed fractions. As a result of students not understanding the material correctly, student learning outcomes will be low. This can be seen from the test results and it is known that the scores obtained by students are still below the Minimum Completion Criteria, namely 80. However, of the 49 students, the percentage obtained was 43%. This value is still below the minimum completion criteria value. Apart from that, during the learning process students rarely ask questions even though they do not understand what the teacher has said, and students lack the courage to express their opinions during learning.

In fact, in learning, students should actively participate, involving intellectually and emotionally in the learning process. As educators, teachers are emphasized to improve the quality of mathematics learning and children's abilities regarding mathematics. The teacher as a facilitator will provide comfort to face learning where students try, construct and rediscover mathematical concepts. In the learning process in elementary schools to improve students' understanding, it is necessary to pay attention that teaching should not only focus on how to learn (how to teach) but should be more oriented on how to encourage students to learn (how to stimulate learning) and how to learn (how to learn). The Contextual Teaching and Learning approach is one of the learning approaches that is starting to be developed in Indonesia in the field of education, especially in the field of mathematics studies. Contextual Teaching and Learning theory refers to the assumption that mathematics must be linked to reality so that mathematics must be close to children and relevant to everyday situations. Reality here means something that students can imagine.

Fraction learning can start from the reality around you, for example sharing cake or pomegranates with classmates or relatives at home (Mawanto et al., 2020). By applying the Contextual Teaching and Learning approach, students will more easily understand fractions, because they can take them and apply them in the reality of their lives. To

introduce fractions, you can use media such as balls, paper, or cake. The application of the Contextual Teaching and Learning approach is expected to provide interesting new nuances to the learning process. seen from the advantages contained in the contextual approach, namely student-centred teaching, making students more active, teachers can help and direct students, so that students receive more meaningful teaching.

The reason researchers want to apply contextual learning is because of the suitability of Contextual Teaching and Learning learning with learning objectives, student characteristics, and characteristics of learning materials (Satriani et al., 2015; Simamora & Fatwa, 2022). Where Contextual Teaching and Learning is learning and teaching that helps teachers link the material they teach with students' real world situations and encourages students to make connections between the knowledge they have and its application in their lives as family members, citizens and at work (Johnson, 2006). Considering that the basic competency is to add and subtract two fractions, a Contextual Teaching and Learning approach is needed to improve learning outcomes for the arithmetic operation of adding fractions. One of the advantages of Contextual Teaching and Learning is that it links learning with material that is familiar to students' conditions and situations.

## **METHODS**

This research uses Classroom Action Research. Classroom action research is a way for a group or person to organize a situation so that they can learn about their experiences and make their experiences accessible to other teachers. Classroom action research is an examination of learning activities in the form of actions, which are deliberately created and occur in a class together. These actions are given by the teacher or with direction from the teacher which are carried out by students. Thus, this research is a form of reflective research, through certain actions to improve and increase learning practices in the classroom professionally. This research uses a Contextual Teaching and Learning approach to support processive educational interaction activities to improve the ability to calculate fraction operations in Mathematics subjects.

In its implementation, the research model adapted by researchers in this study was the Kemmis and Mc Taggart model. The Kemmis and Mc Taggart model of classroom action research essentially takes the form of a set of tools or strands with one set consisting of four stages, namely: planning, action, observation and reflection. The four stages are one unit in the cycle. Classroom action research aims to develop the most efficient and effective learning strategies in natural situations (not experiments). In this research, researchers used participant classroom action research. Because participant class action research is when the researcher who will carry out the research is directly involved in the research process from the beginning until the results of the research the researcher is always involved, then the researcher monitors, records and collects data, then analyzes the data and ends by reporting the results of the research. Participant classroom action research is also carried out in schools, only here the researcher is required to be directly and continuously involved from the beginning to the end of the research. The data collection techniques used were observing teacher activities, observing student activities and testing student learning outcomes. The quantitative data collected in this research will be analyzed using a percentage formula and described.

This research was carried out at MIN 7 Banda Aceh City which is located on Jln. Cut Nyak Dhien, West Lamteumen, Jaya Baru District, Banda Aceh City. One of the aims of this research is to improve the learning outcomes of fifth grade students in the arithmetic operation of adding fractions. The subjects in this research were students in class V-3 of MIN 7 Banda Aceh City with a total of 49 students. Consisting of 26 male students and 23 female students. The class selection was based on suggestions from teachers at the school because the learning outcomes were still lacking. This was obtained from the results of interviews with Mathematics teachers at MIN 7 Banda Aceh City in October 2022.

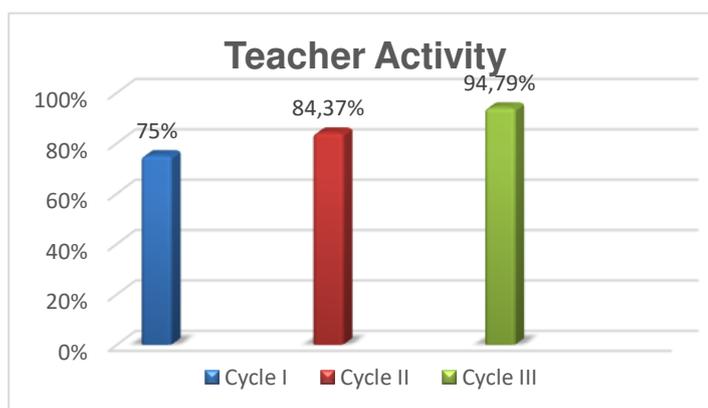
## RESULTS

This research is classroom action research, namely an activity carried out to observe events in the classroom to improve practice in learning so that the quality of the process is higher so that learning outcomes are better. The learning process can be said to be optimal if there is teacher and student activity in the learning process. Achieving a learning goal means that the teacher has succeeded in teaching. The success of teaching and learning activities is known after a test is held with a set of questions. The extent to which the level of success of teaching and learning activities can be seen from students' absorption capacity and the percentage of students' success in achieving learning objectives can be seen from learning outcomes.

This research was only carried out in three cycles with the aim of seeing the application of the Contextual Teaching and Learning approach. The results of data analysis on teacher activities, student activities, and learning outcomes show that the learning that takes place meets the learning criteria for the Contextual Teaching and Learning approach, there is an increase obtained from the first cycle to the second cycle and from the second cycle to the third cycle. In the following, the researcher will discuss data analysis of teacher activities, student activities and learning outcomes regarding the application of the Contextual Teaching and Learning approach to the addition of fractions material which can be seen in the following discussion:

### Teacher Activities in the Learning Process

Based on the results data obtained from teacher activities during the learning process using the Contextual Teaching and Learning approach, there was an increase in the first cycle, second cycle and third cycle. This can be seen from the score obtained in the first cycle with a percentage value of 75% in the good category, the second cycle with a percentage value of 84.37% in the very good category, while in the third cycle with a percentage value of 94.79% in the very category. Good. The results of observations of teacher activities in the first cycle, second cycle and third cycle can be seen in the following graph.



**Figure 1.** Results of Teacher Activity Observations

With these gains, it shows that teacher activity has increased every cycle in the learning process by implementing the Contextual Teaching and Learning approach. The teacher's activities in carrying out learning in the initial activities, core activities and final activities have been carried out in accordance with the plans in the first to third lesson implementation plans. This is due to improvements being made to deficiencies in aspects of the activities each cycle.

### Student Activities in the Learning Process

Student activities are a series of physical and mental activities that are interrelated to create optimal learning. Student activity in learning is a very important element in determining whether learning is effective or not. In this activity, students dominate the learning process so that they can develop their child's potential. In other words, in their activities students do not only listen, take notes and obey the teacher as is often found in conventional learning. Learning activities are a series of student activities, both physical and mental, during the learning process so that an optimal learning atmosphere can be achieved. According to Sardiman, activities are very necessary in learning activities. Without activity, the learning process cannot proceed well.

Based on the results of observations of student activities, students also experienced an increase in each cycle. In the first cycle, the percentage value was 71.87% in the good category, in the second cycle there was an increase with a percentage value of 82.29% in the very good category, while in the third cycle there was an increase with a percentage value of 92.70% in the very good category. Thus, it can be concluded that student activities at MIN 7 Banda Aceh City in class V-3 during learning through the application of the Contextual Teaching and Learning approach are going very well and in accordance with the expected criteria. The following graph shows the increase in student activity as follows:



Figure 2. Results of Student Activity Observations

### Student learning outcomes

To see student learning outcomes on the addition of fractions material through the application of the Contextual Teaching and Learning approach at the end of each meeting the researcher gave post-test questions. The test was carried out three times, namely in the first cycle, second cycle and third cycle after the learning process took place, the aim was to determine the students' success and ability to understand the subject matter that had been taught. After the test results are collected, the data is processed by looking at the Minimum Completion Criteria that apply in the MIN 7 Banda Aceh City, namely 80%.

Learning completeness can be seen if it meets the Minimum Completeness Criteria set by the school, namely 80 for individual completeness and 90% percentage of completeness for classical completeness, as determined by the school. The percentage of student learning completion in the first cycle was 32 students (65.3%), while 17 students (34.69%) had not yet completed it. Then there was an increase in the second cycle, namely

with a completion percentage of 40 students (81.63%), while 9 students (18.36%) had not yet completed. And in the third cycle there was also an increase, namely the completion percentage of 46 students (93.87%), while 3 students (6.12%) did not complete. Thus, student learning outcomes in the third cycle have been classically completed.

In Mulyasa's opinion, a student can be considered to have completed learning if he is able to master the competencies or achieve the learning objectives of at least 70% of all learning objectives. Meanwhile, class success can be seen from the number of students in the class. Therefore, the student learning outcomes in the learning process for each cycle can be seen in the graph below:



**Figure 3.** *Mathematics Learning Outcome*

Based on figure 3 above, it can be seen that students' learning mastery has improved in each cycle. Achieving learning success cannot be separated from the teacher's efforts in managing learning at each meeting. This shows that the level of student learning completeness through the application of the Contextual Teaching and Learning approach at MIN 7 Banda Aceh City is said to be successful and has increased in each cycle.

## **DISCUSSION**

The research results show that the contextual teaching and learning approach can improve student learning outcomes in mathematics learning. Improved learning outcomes are obtained through environmental involvement in the learning process which makes it easier for students to understand the context of the material being taught. This is in accordance with the findings of Dasopang et al. (2022) who stated that learning objectives would be much easier if they involved the students' surrounding environment because they felt that the material being taught was very close to their everyday environment. In line with these findings, Lubis et al. (2021) in their findings explained that students' mathematical anxiety is very high, this is because mathematical concepts are very abstract, therefore involving the environment in learning through a contextual approach will help abstract abstract mathematical concepts, so that learning goals are easily achieved.

Student learning activities in this study also increased. This is because the contextual teaching and learning approach emphasizes student activity in the learning process by directly involving the environment. The findings of Satriani et al. (2015) stated that implementing a contextual teaching and learning approach will attract students' attention to the learning process because they will more easily master complex and abstract mathematical material. Complex, abstract and continuous mathematical material

requires students to be more disciplined, so that no concepts are missed (Lubis & Wangid, 2019).

## CONCLUSION

Based on the discussion of the research results above, it can be concluded that teacher activity in managing learning by applying the Contextual Teaching and Learning approach in the first cycle, second cycle and third cycle has increased, namely with a percentage value of 75% (Good) in the first cycle, namely the second cycle. 84.37% (very good), and increased again in the third cycle, namely 94.79% in the very good category. Student activity in participating in learning activities using the Contextual Teaching and Learning approach also increased in the first cycle, second cycle and third cycle. In the first cycle, the percentage score was 71.87% (Good), then it increased in the second cycle, namely with a percentage of 82.29% (very good), and increased again in the third cycle, namely 92.70% in the very good category. Student learning outcomes by applying the Contextual Teaching and Learning approach in the first cycle with a percentage value of 65.3% in the sufficient category, then experienced an increase in the second cycle with a percentage value of 81.63% in the very good category, and classically increased with The percentage was higher in the third cycle, namely 93.87 in the very good category.

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