The Application of Snowball Throwing Cooperative Model assisted by KOKAMI Media to Increase Students' Activeness and Learning Achievement in Learning Mathematics Volume of Cube and Beam Spaces in Fifth Grade at Public Elementary School 3 Adisana

Rizki Amalia[1*], Sri Muryaningsih[2]

Program Study Primary School Teacher Education, Faculty of Teacher Training and Education
Muhammadiyah University of Purwokerto
Jl. KH. Ahmad Dahlan, Dusun III, Dukuhwaluh, Kembaran Subdistrict, Banyumas Regency, Central Java 53182
amaliaarzqi19@gmail.com*, srimuryaningsih@gmail.com

Abstract: This study aims to enhance student engagement and learning achievement through the implementation of the Snowball Throwing cooperative learning model assisted by KOKAMI media in the mathematics subject, specifically in the topic of volume of cubes and Block Spaces, for fifth-grade students at Public Elementary School 3 Adisana. This research adopts a classroom action research design conducted in two cycles, with each cycle consisting of two sessions. The subjects of this study are 25 fifth-grade students (15 males and 10 females) from Public Elementary School 3 Adisana in the academic year 2022-2023. Data collection techniques include observation, interviews, and documentation. Data analysis follows the Kemmis and McTaggart action research model, consisting of planning, action, observation, and reflection, implemented in two cycles, with each cycle consisting of two sessions. Student engagement levels are obtained from student engagement observation sheets, while student learning achievement data are obtained from evaluation sheets. An improvement in student engagement is observed from cycle I, categorised as sufficient, to a good level in cycle II. Moreover, there is an improvement in student learning achievement, with a majority of students achieving the Minimum Competency Criteria (KKM) in cycle II, meeting the Minimum Competency Criteria set by both the school and the curriculum. Based on the research findings, it can be concluded that the implementation of the Snowball Throwing cooperative learning model assisted by KOKAMI media can enhance student engagement and learning achievement in the mathematics topic of volume of cubes and Block Spaces for fifth-grade students at Public Elementary School 3 Adisana in the academic year 2022-2023.

Keywords: *Engagement, KOKAMI, achievement, Snowball Throwing.*

Abstrak: Penelitian ini bertujuan untuk meningkatkan keaktifan dan prestasi belajar siswa melalui penerapan model pembelajaran kooperatif tipe *Snowball Throwing* dibantu media KOKAMI pada mata pembelajaran Matematika Volume Bangun Ruang Kubus dan Balok

kelas V SD Negeri 3 Adisana. Penelitian ini merupakan penelitian tindakan kelas yang dilaksanakan dalam 2 siklus. Subjek adalah siswa kelas V SD Negeri 3 Adisana semester II tahun ajaran 2022/2023 yang berjumlah 25 siswa, terdiri dari 15 laki-laki dan 10 perempuan. Observasi, wawancara, dan dokumentasi merupakan teknik pengumpulan data penelitian yang digunakan. Analisis data menggunakan model PTK Kemmis dan Mc. Taggart yang dalam siklus terdiri dari tahap perencanaan, tindakan, observasi, dan refleksi yang dilaksanakan dalam 2 siklus, setiap siklus terdiri dari 2 pertemuan. Data skala keaktifan siswa diperoleh dari lembar observasi keaktifan siswa dan data prestasi belajar siswa diperoleh dari lembar evaluasi. Pada keaktifan belajar terjadi peningkatan dari siklus I dengan kriteria cukup menjadi kriteria baik di siklus II dan peningkatan prestasi belajar siswa yang sudah mencapai KKM pada sebagian besar jumlah siswa pada siklus II dengan memenuhi KKM yang ditetapkan sekolah maupun Kurikulum. Berdasarkan hasil penelitian dapat disimpulkan penerapan model pembelajaran kooperatif tipe *Snowball Throwing* dibantu media KOKAMI dapat meningkatkan keaktifan dan prestasi belajar siswa pada pembelajaran Matematika Materi Bangun Ruang Kubus dan Balok Kelas V di SD Negeri 3 Adisana semester II tahun ajaran 2022/2023.

Kata kunci: Keaktifan, KOKAMI, prestasi, *Snowball Throwing.*

INTRODUCTION

The progress of a nation relies heavily on education. Education is of utmost importance as it enables a nation to adapt to changes and thrive on the world stage, bridging gaps in various fields. The purpose of education is to equip students with the social skills they need to flourish in the future (Mudyahardjo, 2014). The implementation of education at the Elementary School level serves as the foundation for future educational endeavours.

Athematics education in elementary school: fostering critical thinking and active participation Mathematics is a compulsory subject for all students, regardless of grade level. In Elementary School, mathematics takes centre stage in the classroom. According to Offirston (2014), the ability to think mathematically is crucial for problem-solving in the real world. The study of mathematics in elementary school aids in the development of students' abilities for systematic thinking, collaboration, and critical thinking (Kenedi, Helsa, Ariani, Zainil, & Hendri, 2019, p. 69). However, mathematics should be prioritised as it helps students develop quantitative thinking skills in various settings.

Teachers play a crucial role in creating a desirable learning environment by actively engaging students in the teaching and learning process. To enhance the classroom atmosphere, students should participate as much as possible in all classroom activities, both physical and non-physical (Wibowo, 2016, p. 130). Students can apply

their activeness to any learning method. The outcome of a student's learning process after engaging in a specific learning process is known as learning achievement (Harahap, Nasution, & Manurung, 2019, p. 524). Learning activities are a process, and learning achievements are the product of that process, and both cannot be separated.

The lack of student engagement and performance in mathematics has been observed by teachers at Public Elementary School 3, Adisana. Several students in the class are still struggling with counting up to ten, which hampers the learning process. During teacher-led conversations or question-and-answer sessions, only a small fraction of the class actively participates, and it is usually the same students who participate consistently. Nearly half of the students in the class clearly show a lack of attention, remaining silent and occasionally relying on their peers to ask questions, thereby creating an unfavourable learning environment and ultimately disrupting the focus of other students. Fifth grade consists of 25 students who underwent the Mid-Semester Assessment in Mathematics. Out of these, 16 students, accounting for 64%, achieved a passing grade based on the Minimum Mastery Criteria of 70. This assessment took place in November 2022 for the academic year 2022–2023. The obtained results indicate that the learning achievement of fifth-grade students at Public Elementary School 3 Adisana has not reached its maximum potential and requires improvement. Therefore, student achievement should surpass the Minimum Competency Criteria of 70, as defined by the curriculum.

The fifth-grade teacher has made various efforts to utilise the different teaching models available. Group discussions are frequently conducted; however, when the teacher organises group discussions, it often leads to a noisy and disruptive classroom environment, with students engrossed in their own separate groups. The teacher has also utilised the available teaching media, such as visual aids, but they have received limited attention from the students. Despite these efforts, there has been no significant improvement in student engagement or performance resulting from these endeavours.

Considering the aforementioned challenges, it is evident that we need a method to transform the current educational landscape. Cooperative learning is a teaching method that has been proven to enhance student engagement and performance. In a

cooperative learning environment, students learn and complete tasks as part of a collaborative group. Cooperative learning activities promote student cooperation (Rusman, 2018).

Cooperative learning that actively engages students in the learning process is the snowball Throwing cooperative type, which has been innovated upon. The Snowball Throwing type is characterised by study groups that possess specific characteristics. By posing investigative questions, the group leader can assess whether members have fully grasped the conveyed material (Manurung, Samosir, Hia, Mariani, Togi, & Tambunan, 2019, p. 127). Snowball throwing involves the use of question-answer sheets formed into balls, which are then given to students to answer. In Snowball throwing, students are encouraged to develop their understanding of the subject matter by asking questions and receiving answers from the teacher (Huda, 2015). This cooperative snowball-throwing activity also requires participants to ask questions, involving students in an engaging game.

Learning media is used as a tool for teachers in the classroom to facilitate effective communication of teaching models to students. The Snowball Throwing Teaching Model involves the following steps: (1) The teacher presents the material; (2) Forming groups; (3) The teacher explains the material; (4) Writing down questions; (5) Creating and throwing balls; (6) Answering questions; (7) Evaluation; and (8) Conclusion (Suprijono, 2015). While a group of children may become enthusiastic and physically active with ball-throwing games, they also have other hobbies and sports to engage in.

In this research, we employ the Snowball Throwing game as a means to apply a cooperative learning paradigm and enhance the use of media. Teaching and learning are enhanced through the use of various forms of media, as there are numerous choices for educational materials. Media-based instruction has been shown to increase student engagement and motivation in school (Cecep & Daddy, 2020). Facilitating learning with educational media can leave a positive impression and generate interest in the subject matter. One learning medium that can assist teachers is the KOKAMI (Mystery Card Box). KokaMI is a learning tool that combines linguistic games. Such materials can greatly inspire and invigorate students' enthusiasm for participating in learning activities (Rusiana, 2014, p. 186). This research will innovate the Snowball Throwing model by

incorporating the KOKAMI media. The KOKAMI media used in this study will have an appealing design and contain questions, penalties, and bonuses on colourful pieces of paper made into small envelopes by the students. Here is an example of the Kokami learning medium.

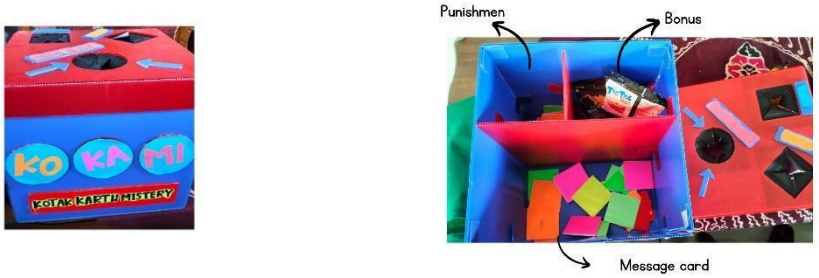

Figure 1. KOKAMI Learning Media

In response to the aforementioned issues, a research study was conducted at Public Elementary School 3 Adisana in fifth grade, utilising the Snowball Throwing model with the aid of KOKAMI media in the teaching of mathematics, specifically the topic of "Volume of Volume of Cube and Block Spaces." The research problem formulated aimed to investigate the implementation of the cooperative Snowball Throwing model supported by KOKAMI media in improving students' engagement and learning achievement in the subject of Mathematics, specifically the topic of Volume of Cubes and Block Spaces, in fifth grade at Adisana State Elementary School 3. Consequently, the research objectives were set to enhance students' engagement and learning achievement through the implementation of the cooperative Snowball Throwing model supported by KOKAMI media in the teaching of Mathematics, specifically the topic of Volume of Volume of cubes and Block Spaces, in fifth grade at Public Elementary School 3 Adisana.

RESEARCH METHOD

Classroom Action Research (PTK, Penelitian Tindakan Kelas) has been employed in this study. This research constitutes teacher-led actions with the aim of maintaining the integrity of the teaching process in the classroom. PTK emphasises instructional strategies that replicate real-world scenarios within the classroom. Arikunto claims that "action" refers to the method prescribed by the teacher for students

to engage in actions that deviate from the norm (Arikunto et al., 2015). The purpose of PTK is to enhance and improve the quality of education provided in schools, ensuring that any initiatives taken are more effective than regular practises.

The Kemmis and McTaggart PTK Model is the model of Classroom Action Research utilised. The research cycle comprises the stages of planning, action implementation, observation, and reflection. This classroom action research cycle consists of four steps (Arikunto, 2015). The snowball-throwing learning paradigm is employed to facilitate the learning process. The research is conducted through collaboration among the researcher, observer, and classroom teacher.

This research focuses on fifth-grade students at Public Elementary School 3 Adisana in the Kebasen District, Banyumas Regency, and was conducted during the second semester of the academic year 2022-2023. Fifth-grade students at Public Elementary School 3 Adisana participated in this study throughout the academic year 2022-2023. In Public Elementary School 3 Adisana, fifth grade consists of a total of 25 students, comprising 15 boys and 10 girls. The identified issues in fifth grade have resulted in a lack of student engagement and learning achievement, particularly in mathematics. Thus, the researcher will investigate how to enhance the engagement and learning achievement of fifth-grade students by implementing the cooperative snowball throwing model.

The data for this investigation were collected using various testing and non-testing approaches. An example of a measurement activity that can be conducted using tests is answering questions intended to assess intelligence (Arifin, 2014). In this study, a descriptive format is used for the examinations. The tests from cycles I and II will be conducted in the same manner. Non-testing approaches are evaluation tools that do not require the use of test kits to further explore the students' conditions (Muryaningsih & Ariyati, 2020, p. 279). Written test questions are employed as a data collection strategy in this research to measure students' achievement. Observation sheets are divided into three categories: student activity sheets for learning, instructor activity sheets, and student activity observation sheets. The measurement scale used in this study ranges from 1 to 4 (Anjarawati, 2018, p. 100). The first score represents the lowest score, while 4 represents the highest score.

RESULTS AND DISCUSSION

The application of the cooperative learning model, specifically the snowball throwing type, assisted by KOKAMI media, was conducted through classroom action research at Adisana State Elementary School 3. The subject matter focused on the topic of Volume of Cubes and Block Spaces during the second semester of the academic year 2022-2023.

1. Learning Engagement

Data analysis from the research revealed an increase in the level of student engagement in the fifth-grade class. This can be observed from the summary of student activity observation sheets in Cycle I and Cycle II at Public Elementary School 3 Adisana, as depicted in Figure 2 below:

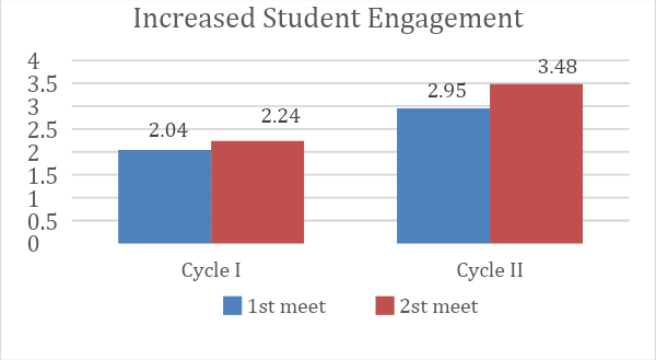

Figure 2. Histogram of Increased Student Engagement in Cycle I and Cycle II

The average student learning activeness score was 2.04 in cycle I meeting 1 and 2.24 in cycle I meeting 2, with an average cycle I score of 2.15 with sufficient criteria. The scores for cycle II meetings 1 and 2 averaged 3.22 and 3.48, respectively, with an average of 3.22 that met the excellent criteria. The application of the Snowball throwing-type cooperative model assisted by Kokai media can be said to be successful in increasing learning activity. The implementation of the cooperative Snowball Throwing model supported by Kokai Media can be considered successful in enhancing student engagement.

The histogram illustrates the improvement in student engagement in each cycle. This improvement did not happen by chance. After the class sessions, the researcher engaged in reflection with the observer and the teacher regarding any deficiencies in the conducted learning, enabling the teacher to make necessary improvements for the subsequent meetings. The teacher implemented the learning process based on the Lesson Implementation Plan (RPP) and improved their teaching methods. The increase in student engagement was influenced by the increased activity of the teacher in each meeting. If the student engagement shows increasingly better results, it indicates that the teacher's activities in teaching have also improved.

Increased student engagement can be achieved through activities such as group discussions, exchanging ideas during discussions, working on student worksheets, and playing with KOKAMI media (Mystery Card Box) by following the instructions provided. During these discussions, students ask each other questions to solve problems on the worksheets. Engagement encompasses a series of actions and thoughts that cannot be separated. Effective learning requires various activities, including mental and physical engagement (Zayyin, 2017, p. 13). Students who are motivated to take initiative and actively participate in their education are more likely to succeed academically.

2. Student Learning Achievement

Table 1. presents the improvement in academic achievement of fifth-grade students at Adisana State Elementary School 3.

Table 1. Improvement in student learning achievement from pre-action to Cycle II

Cycle	Lowest Score	Highest Score	Passing Grade	Relative Frequency
Pre-action	45	100	16	16/25 x 100% = 64%
I	40	100	17	17/25 x 100% = 68%
II	60	100	22	22/25 x 100% = 88%

Table 1 above shows that student learning achievement consistently improved both in terms of class percentage and other indicators. In Cycle I, out of 25 students, 8 did not meet the minimum competency, while 17 students achieved the minimum competency. In Cycle II, in the context of Mathematics learning, out of 25 students, 3 did not meet the minimum competency, while 22 students achieved the minimum competency. The learning activities of students were aligned with the learning activities

implemented through the model. The proportion of students who completed Cycle I in Mathematics was 68%, while the percentage who completed Cycle II was 88%, representing an improvement that reached a minimum of 80% in this case. The results of this data show that, in addition to active learning, the application of cooperative Snowball Throwing supported by KOKAMI can improve student learning achievement. This is evidenced by the fact that the acquisition of mathematics has reached 88% of students who have reached the KKM.

The transition from Cycle I to Cycle II resulted in an improvement in student learning achievement. Students engaged in learning activities and created collaboration within diverse small groups, known as cooperative learning. This type of learning prepares students to collaborate and take responsibility to support one another as they learn subjects (Rusman, 2018). Collaboration between students and learning media helps with information retention. According to Piaget's theory of child development, all children go through the stages of sensorimotor, preoperational, concrete operational, and formal operational (Moreno in Alahmad, 2020, p. 1585). Between the ages of seven and eleven or twelve, children enter the concrete operational stage. Logical thinking characterises this stage. The main change during this stage is that children's thinking becomes less reliant on perception and more focused on logic (Sanghvi, 2020, p. 94). Students can benefit from the use of learning media as it allows them to see how instructors approach teaching the content.

The result of participating in learning activities is student learning achievement. Learning achievement is a deliberate effort to fulfil their needs. Essentially, needs are a process that causes someone to change, namely their behaviour. The shift in behaviour impacts students' academic achievement, where the result is an impression that causes people to change as a consequence of learning activities (Mulyasa, 2014). Teachers can influence students' ability to learn by engaging them in more effective learning activities. The criteria for Cycle 1 are sufficient, and there was an improvement in the criteria for Cycle II.

CONCLUSION

According to the research and discussion, it shows that snowball throwing-type cooperative learning assisted by KOKAMI media that has been carried out in fifth grade students of State Elementary School 3 Adisana with learning the volume of cubes and beams has increased. This is indicated by the average value of cycles I and II, which ranged from 2.15 for sufficient criteria to 3.22 for good criteria. Fifth grade students of State Elementary School 3 Adisana can utilise KOKAMI media in the snowball throwing cooperative learning paradigm to increase mathematical knowledge related to the volume of cubes and blocks, with an increase from 68% to 88% in cycle I to cycle II. This is supported by Puput Aprilani Anjarawati's research entitled "Efforts to Increase Student Learning Activeness and Learning Achievement on Theme 9 through the Snowball Throwing Type Cooperative Learning Model with the Help of Learning Box Media in Class IV B of Pasir Wetan State Elementary School". The research findings show that students are actively involved in learning for both the first and second themes of Learning Area 1 to achieve a mastery level of 65% in science. The science class obtained a learning completeness score of 80 percent in cycle II topics two and three, while the Indonesian language class obtained a score of 82.5%. Fourth grade B students of Pasir Wetan State Elementary School, consisting of 20 students, participated in the learning (Anjarawati, 2018, p. 100). Therefore, applying a cooperative approach such as snowball throwing assisted by Kokai Media can increase student activeness and learning.

ACKNOWLEDGES

The author acknowledges that a number of people and organisations contributed to the success of this research. I would like to thank: Rector of Muhammadiyah Purwokerto University, Assoc. Prof. Dr. Jebul Suroso, Ns., S.Kp. Dean of the Faculty of Teacher Training and Education, Universitas Muhammadiyah Purwokerto, Drs. Eko Suroso, M.Pd. The Head of the Elementary School Teacher Education Study Programme, Dedy Irawan, M.Pd. Mrs. Sri Muryaningsih, M.Pd., has been an inspiring and very helpful mentor and supervisor. To my parents, Mrs. Nasriyah and Mr. Suratno, who never stop praying, loving, encouraging, and providing endless support. The fifth grade teacher of Adisana State Elementary School 3, Mrs. Riana Sugiarti, S.Pd., who helped the researcher conduct classroom learning My best friends Naya, Syifa, and Sofi,

who always supported me as I completed my research, To my friends in arms, I would like to thank you for your encouragement and support during my time to complete my studies. May Allah SWT continue to shower us with His blessings and improve every area of our lives.

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