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Students' Self-Regulated Learning on Division Algorithm with A Fair-Share Method

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Abstract. Learning environments should be where constructive and self-regulated learning is fostered. Teachers should transform their mathematics classes into something more challenging and fun while building students' numeracy skills and learning character. Self-regulated learning is a learning character that students must have to become agentic life-long learners in an unpredictable, dynamic, and ever-changing society. This study aimed to describe students' self-regulated learning on the division algorithm with a fair-share method. This was descriptive qualitative research using the case study method conducted in six weeks. The subjects of this study are ten students in grade four. The data sources were collected from self-regulated learning scales and students' learning activity observation sheets. The data was analyzed through data reduction, data presentation, and conclusion. This study unveiled that a teaching division algorithm with a fair-share method could nourish students' self-regulated learning. Proven that only 20% of students had moderate levels of self-regulated learning; 50% of students had high levels of self-regulated learning; and 30% of students had very high levels of self-regulated learning. Furthermore, the average score of self-regulated dimensions was classified as very good. The fair-share method also impacted students' behavior to be excited in learning and exposing them to mathematical modeling through the dividing candies activity.

Keywords: A Fair-Share; Division Algorithm; Method; Self-Regulated Learning; Students.

1. Introduction

Learning in the 21st century has shifted to what learners did in the 20th century. The most dominant concept is socio-constructivist in which learning is shaped by the context in which it is situated and is actively constructed through social negotiation with other learners (Groff, 2012). Socio-constructivist gives teachers an understanding that a learning environment should be where constructive and self-regulated learning is fostered, sensitive to context, and often collaborative. Self-regulated development and collaborative learning were effective in increasing students' content comprehension (Teng, 2020). Moreover, this could give students meaningful learning, and it leads to achieving educational goals. One of the fundamental goals of primary education in Indonesia is building students' numeracy skills which prepares young to thrive in their lives. Numeracy has the same definition as mathematical literacy, it is the capacity to use mathematical ideas in significant ways in a broad range of daily life contexts and is important for decision-making (Burkhardt & Schoenfeld, 2023). Explicitly, numeracy is the basis for thinking (Dewayani et al., 2021).

Teachers should reform their mathematics classes into something more challenging, and fun while building students' numeracy skills. It feels the need for teachers to incorporate a much wider understanding of how math is taught through numeracy (Hillier, 2007). Beyond content comprehension, teachers should be intrigued to develop some kind of behavior that lifts students' desire to learn. Self-regulated learning is a psychological aspect in which students actively and consciously manage their learning. There is a relationship between enhanced self-regulated learning and motivational and cognitive outcomes (Lee et al., 2023). Rather than focusing on cognitive outcomes that might destroy students' natural desire to learn, it is better to move on to more fundamental which is self-regulated learning. Students' academic competence develops initially from social sources of academic skill and shifts to self-sources

which are observational, imitative, self-controlled, and self-regulated (Schunk & Zimmerman, 1997).

1.1 Problem Statement

It was found that, in the division algorithm learning process, teachers tend to neglect students' self-regulated learning. A subject in mathematics often is taught in traditional methods which loses students' motivation. It has a significant correlation between students' motivation to achieve learning goals and self-regulated learning (Ansel, 2020). The higher the motivation to achieve something, the higher its self-regulated learning. Moreover, self-regulated learning is one of the affective aspects that play a vital role in achieving mathematics learning outcomes (Merawan et al., 2021).

Found the fact that in a classroom that has been researched, methods in teaching mathematics were far away from constructivism. For instance, when it came to learning the division algorithm, students had to memorize multiplication tables and reverse the concept into division. It was kind of frustrating to almost all students. Their difficulties impacted on low self-regulated learning. They had no willingness to participate in the learning process because it was not close to their real world. They didn't learn how the algorithm for division formed. They missed the important thing to learn, and their reasoning skills remained silent.

Building student's self-regulated learning is essential in preparing them to be agentic life-long learners in an unpredictable, dynamic, and ever-changing society (OECD, 2018). Self-regulated learning is conceived as an active and constructive process that is planned proactively and reactively adapted for the attainment of someone's goals (Martínez-López et al., 2023). Self-regulated learning can be defined as a proactive and goal-oriented learning process in which learners will monitor, regulate, and control their cognition, motivation, and behavior (Pintrich, 2004). Studying is also defined as self-regulated learning (Winne & Hadwin, 1998). Similarities between those definitions from experts lie on the line that self-regulated learning has driven students to be actively involved in the learning process. They construct their own learning experiences. To gain knowledge, skills, and attitudes relevant to the learning context and to strengthen cognitive abilities, self-regulated learning focuses on thoughts, feelings, and behaviors (Atmojo et al., 2023).

Therefore, teachers should expose students to activities that captivate their willingness to be more responsible themselves. This learning activity set could be delivered using a context and proper method. As students are glued to those activities, unconsciously they establish a learning character which is self-regulated learning. To develop self-regulated learning, students should be allowed to work in a learning context in which they can build their own learning experiences based on their goals (Boekaerts & Niemivirta, 2000). One of the solutions to nourish students' self-regulated learning on the division algorithm is to provide them with opportunities to practice in a variety of contexts through the fair-share method.

1.2 Related Research

There were no previous researchers have researched fair-share methods. But, extending to its roots as context and constructive learning, lots of research has been done. First, high school students' self-regulated learning in a contextual approach performed better than traditional learning (Yuanita & Sugandi, 2018). The contextual approach in mathematics teaching was studied using a quasi-experimental research design. Treatment manipulation was used in the study, with the contextual method being used by the experimental class and regular learning being used by the control class. According to Yuanita and Sugandi's research findings, students' mathematical connections and self-regulated learning were improved by the contextual approach. The study showed that, in comparison to traditional learning, students' mathematical connection skill was improved while employing a contextual method. Furthermore, it was discovered that students who used the contextual approach had greater self-regulated learning than those who used the traditional learning method. The outcomes showed that there was a high to medium degree of increase in both self-regulated learning and mathematical connection skills. The study also found that, when comparing the experimental class (which used the contextual method) to the control class, students in the

experimental class were more successful in achieving self-regulated learning and mathematical connection ability.

Second, contextual learning has a positive impact on students' self-regulated learning (Husna, 2021). Husna's research occurred in junior high school, but this study occurred in primary school. It was quasi-experimental research. Husna stated that students' mathematical critical thinking skills are significantly influenced by the Contextual Teaching Learning models. Furthermore, students' self-regulated learning was also significantly influenced by contextual learning. Students are used to being active in solving problems and thinking individually to get concepts. Because learning is not just transferring knowledge from teacher to student, but rather a process that is conditioned or pursued by the teacher, so that students are active in various ways to build their knowledge so that their self-confidence increases.

Third, the current study determined middle school students' self-regulated learning profiles and looked at how these profiles varied in terms of classroom engagement and mathematics achievement outcomes (Cleary et al., 2021). Based on contextual, regulatory, and motivational factors related to students, cluster analysis identified a four-factor approach as the best interpretable. The four clusters differed in terms of levels (high and low) and two aspects (perceived contextual supports and self-regulated learning). The most adaptive results were shown by students who reported having good self-regulated learning abilities, both in terms of their participation in the classroom and their mathematical proficiency. Students who showed a poor attachment to school, low self-regulated learning skills, and a low perception of teacher support comprised the least adaptive profile. Compared to the other clusters, the last one showed statistically substantially lower standardized mathematical achievement scores.

Fourth, student-centered learning environments in mathematics courses play a crucial role in supporting students' self-regulation of learning (Lahdenperä et al., 2022). The study used a sequential strategy and a mixed-methods research design that was dominated by qualitative techniques. The study included students from a mathematics department at a research-intensive university in Finland who took both Course A and Course XA. Students' regulated learning is greatly aided by elements including scaffolding, peer support, task design, and teaching methods. The results highlight how important it is to foster a supportive social atmosphere and offer sufficient resources to support students in effectively regulating their learning. Furthermore, the research highlights the significance of contextual elements in supporting students' self-regulated learning and offers useful recommendations for educators to create efficient learning spaces in mathematics education.

Based on the related research explained, Yuanita & Sugandi (2018) suggested using a contextual approach to promote self-regulated learning in high school. Husna (2021) promoted junior high students' self-regulation through contextual learning. Cleary et al. (2021) suggested paying attention to self-regulated learning as a factor in getting better mathematics achievement outcomes, but the participants of the research were middle school students. Meanwhile, Lahdenperä et al. (2022) proved that student-centered learning environments played a crucial role in supporting students' self-regulation learning at the university. Therefore, this study focused on exploring students' self-regulated learning with contextual teaching using the fair-shared method at elementary school. The subjects and the fair-shared method in this study are something unique that distinguished from previous research and become a novelty.

1.3. Research Objectives

Based on the explanation, researchers are interested in bringing a context and constructive method which is the fair-share method to nourish students' self-regulated learning on division algorithm in grade four. The research objectives are: (1) to investigate their level of self-regulated learning in the learning environments we create through the fair-share method; (2) to dig deeper into how fair-share methods expose students' self-regulated learning.

2. Theoretical Framework

2.1. Self-Regulated Learning

Bandura, an American psychologist, and social cognitive theory originator, believes that human behavior is primarily self-regulated; otherwise, individuals would change direction to meet the momentary requisite of the situation (Bandura, 1977). In a mathematics learning context, it implies that instead of waiting to be impacted by the environment, learners are free to control how they learn. This implies that students actively participate in directing the entire learning environment rather than being passive consumers of solving a mathematics problem. It is evident that not all students possess the same level of self-regulation in their learning, though; some demonstrate it to a greater extent than others. There are several possible causes for this, one of which is regulation.

Based on various levels of students' self-regulated learning, students might use several techniques to encourage, manage, and direct the learning process (Boerner et al., 2005; Marsh et al., 2006). Rehearsing and forming associations are examples of cognitive (elaboration) learning strategies, which are mental exercises that center on information processing. They facilitate students to connect new information with prior knowledge, organize preexisting memory structures, and facilitate storing long-term memory. Conversely, students who engage in metacognitive (control) activities are better able to regulate how they apply cognitive methods in different contexts. They speak about the regulatory actions required to keep an eye on and adjust to the process of learning. Students need to use metacognitive techniques to manage their interests and attention spans. Lastly, as internal, or external resources, students can use resource management techniques to maintain focus or organize their surroundings. Task-based implementations should be a part of procedures when working with young children. Task-based implementations should be a part of procedures when working with children for mathematics activities to promote metacognitive (Aydın & Dinçer, 2022). This leads students to maintain their self-regulated learning to engage in mathematics learning.

Measuring students' self-regulated learning could be done with a self-regulated scale. Self-regulated learning indicators in this study were adapted from Wen, et al. (2023). There are four dimensions we focus on for framing division algorithm learning within the context of self-regulated learning which are value and interest, retrieving strategy, problem-solving, and self-control. It will be examined each of these four dimensions in more detail in the section that follows.

Value and interest are purposely used by learners to drive their motivation in achieving productive learning (Wolters, 2003). The expectancy-value model perspective can be used to operationalize strategies according to individuals' perceived values and interests. In the mathematics learning context, the expectancy indicators reflect how much students believe they can succeed in learning division algorithms, including self-efficacy and regulating ideas to learn. Retrieving strategies relate to the methods that students use to help them comprehend the division algorithm and activate prior knowledge for understanding how to divide fairly. Students connect their previous knowledge to solving the problems. Problem-solving is the ability to think creatively, with logic, criticism, and systematic (NCTM, 2000). Gagne also highlighted that the capacity to solve difficulties is a collection of techniques or methods that promote increased mental independence in thinking (Hidayati & Wagiran, 2020). It is not required to conduct separate activities to develop problem-solving abilities between learning content and problem-solving competencies so that linked activities can accomplish learning objectives (Yeo & Tan, 2014). This study overviews students' procedures for dividing candies fairly as a set of problem-solving skills. Self-control includes what are known as metacognitive methods, or tactics for considering the cognitive processes and resources used during learning or finishing a learning assignment (Winne, 2018). The operationalization of the metacognitive techniques is explained as tactics to ease the planning, oversight, evaluation, and complete the assignment (Shreve, 2006). In the context of division algorithm learning, metacognitive strategies can be categorized into three parts: planning (e.g., carefully counting the candies to divide fairly), monitoring (e.g., writing down the problems and solutions in case they face

difficulties), and evaluating (e.g., reflects to their classmates' task on the problems that encountered).

2.2. Fair-Share Method

Long division is the one standard algorithm that starts with the biggest pieces. The conceptual basis for the algorithm can be taught as fair-share methods. This method was adapted from Van de Walle, et al. (2015). Traditionally, we could hear someone say, "4 goes into 5 one time," if the problem can be solved by dividing 559 by 4 using a technique known as "porogapit". Students found this to be a little puzzling. How come you continually modify the issue while ignoring the "59"? Instead of seeing them as separate digits 5, 5, and 9, the teacher wanted the students to think of them as 5 hundreds 5 tens 9 ones. Using a context like candies packaged in ten boxes, with ten boxes (or 100 pieces) in a carton, is one idea. The instructor then assigned a problem to solve: We need to divide the 5 cartons, 5 boxes, and 9 pieces of candies equally among the four classrooms. The idea was to give them a context and lead them to construct their learning so their self-regulated learning can be built.

3. Method

3.1. Research Design

This was descriptive qualitative research using the case study method. A case study is research in which the researcher explores in depth an event, process, or activity of one or more people (Sugiyono, 2016). While examples can be analyzed from a program, event, activity, or individual, this bound system is limited by time and place. In other words, a case study is a type of research where the investigator examines a specific phenomenon (case) during a specific period and activity (program, event, process, institution, or social group) and gathers comprehensive and detailed data over a predetermined period using a variety of data collection procedures (Kusmarni, 2012).

In this study, researchers chose the case study method because we want to look at the factual situation of how students' self-regulated learning levels were nourished through the intervention of the fair-share method as a tool to deliver the division algorithm in mathematics learning. Self-regulated learning was measured by a self-regulated learning scale. Data from the scale was explored and examined with learning activity observation to recheck and complete the data.

3.2. Participant

This study was conducted at a public school in Kebumen, Jawa Tengah. The subjects of this study are all students in grade four in the academic year 2023/2024. The subjects were 10 students, which were 6 male students and 4 female students.

3.3. Data Collection

The data sources were collected from self-regulated learning scales and students' learning activity observation sheets. This research was conducted in six weeks. Our self-regulated learning model for framing division algorithm learning with a fair-share method compromises four dimensions as follows: value and interest, retrieving strategy, problem-solving, and self-control which were adopted from Wen et al. (2023). Each dimension was outlined as items of statements with a Likert scale consisting of 2 points (Yes or No). The decision to only use 2 points was considered for convenience to elementary school students. Table 1 shows items for the self-regulated learning scale.

Table 1. The Self-Regulated Learning Scale

Dimension	Number of Item	Items
Value and Interest	1	I have a positive attitude and a keen interest in division algorithm with a fair-share method.
	2	I think division algorithm with a fair-share method lesson are very helpful to my other subjects.

Dimension	Number of Item	Items
	3	Learning division algorithm with a fair-share method really exciting me.
	4	The progress in learning division algorithm with a fair-share method can give me a sense of achievement.
Retrieving Strategy	5	I combine division algorithm with a fair-share method learning with what I have learned such as addition and subtraction.
	6	I combine division algorithm with a fair-share method learning with my own experiences in dividing food fairly.
Problem-solving	7	I share hundreds candy for each set to get 1 hundred.
	8	I'll trade the remaining hundred for 10 tens and combine with the remain tens.
	9	I'll trade the remaining tens for 10 ones and combine with the remaining ones.
	10	I can share those candies fairly without difficulties.
Self-control	11	I count the candy carefully, so I do not have to recount all over again if I make mistakes.
	12	I write down the problems and solutions to divide the candy, so it is easy for me to ask teacher if I get a difficulty.
	13	I often go through my classmates to find out their task and reflect on the problems I encountered in dividing candies.
	14	I can flexibly solve different problem in division.
	15	I can create the questions about division and try to solve it myself as self-taught.

3.4. Data Analysis

Self-regulated learning scale analyzes began by calculating the final score. The final score was obtained by adding up the scores for each statement. Each statement has a minimum score of 1 and a maximum of 2. The final score of each scale was interpreted by some categorization which is shown in Table 2.

Table 2. Self-regulated Learning Interpretation (Azwar, 2015)

No	Final Score	Level
1	$X \leq 4$	Very Low
2	$4 < X \leq 7$	Low
3	$7 < X \leq 10$	Medium
4	$10 < X \leq 13$	High
5	$13 < X$	Very High

Furthermore, the average item's score of each dimension was categorized according to the criteria below.

Table 3. Self-regulated Learning Criteria

No	Average	Criteria
1	0 – 2.5	Low
2	2.6 – 5,0	Fair
3	5.1 – 7.5	Good
4	7.6 - 10	Very Good

Learning activity observation sheets were used to analyze observation data. Researchers wrote the important evidence during the learning. Furthermore, it was described to become data that was ready to use. The observation data was used to complete the self-regulated learning scale.

The overall data in this study was analyzed qualitatively using the Miles and Huberman model. According to Miles and Huberman, qualitative data analysis consists of data reduction, data presentation, and drawing conclusions (Sugiyono, 2015). Data reduction was carried out to be focused according to the research objectives. After carrying out data reduction, the next step was to interpret the data into a short description, which was a narrative text structure. Research data that had been obtained or found was used to conclude. The results of qualitative research can be in the form of descriptions and images of objects that were not previously clear.

3.5. Validity and Reliability

The instrument which is a self-regulated learning scale was validated by an expert through construct validity. Once the validation was proven valid by an expert, the instrument was ready to use. Validity testing in qualitative research according to Creswell & Creswell (2017) is a procedure (for example member checking and triangulation of data sources) used to demonstrate the accuracy of research results and convince readers of this accuracy. To validate all the data, triangulation techniques are used to compare data from self-regulated learning scales and students' learning activity observation results. The validity of the research material was triangulated using both technical and fundamental triangulation. The analytical method makes use of interactive analysis, which is presented, data is reduced, and conclusions are drawn.

3.6. Procedures

The research procedures had seven steps. First, analyzing what teachers and students need in mathematics learning. Second, the researcher chose the right method for nourishing self-regulated learning. Based on literature reviews, a fair-shared method is chosen to deliver division algorithm learning. Third, preparing the instruments. Fourth, collecting the data. Fifth, the data was analyzed. Sixth, the data analysis was interpreted to be a conclusion. Last, arranging the report.

4. Findings

4.1. Self-Regulated Learning Final Score Result

Students' self-regulated learning is evident in the self-regulated scale of 10 students in grade four. The scale's final score was analyzed using self-regulated interpretation which consisted of five levels. Based on the result of the study, students' self-regulated learning was obtained as presented in Table 4.

Table 4. Self-Regulated Learning Result

No	Final Score	Level	Total of Students	Percentage (%)
1	$X \leq 4$	Very Low	0	0
2	$4 < X \leq 7$	Low	0	0
3	$7 < X \leq 10$	Medium	2	20
4	$10 < X \leq 13$	High	5	50
5	$13 < X$	Very High	3	30

Table 4 shows that only two students have a medium level of self-regulated learning. This means only 20% of students with medium self-regulated learning in division algorithm learning use a fair-share method. Five students or 50% of them show a high level of self-regulated learning. Thus, 30% of students give an outstanding score with a very high level of self-regulated learning. To make it clear, the data dissemination can be seen from the pie chart in Figure 1.

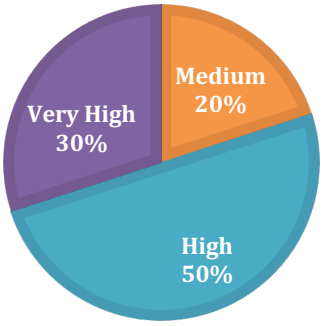

Figure 1. Distribution of Self-Regulated Learning Score

4.2. Self-Regulated Learning Dimensions Score

To take a closer look at what dimensions perform higher, it has been analyzed based on the average score of each item. Based on the result of the study, the average score of each dimension is presented in Table 5.

Table 5. Average Score of Each Item

No	Dimensions	Average	Category
1	Value and Interest	10	Very Good
2	Retrieving Strategy	10	Very Good
3	Problem-solving	8	Very Good
4	Self-control	6.2	Good
	Average	8.55	Very Good

Based on Table 5, value and interest and retrieving strategy are the highest among others. Meanwhile, self-control is the lowest. Overall, those four dimensions performs very good based on the average.

4.1. Learning Activity Observation

To make a clear vision of how this learning environment occurred, here is some learning footage presented in Figures 2 and 3.

Figure 2. Students' activity in dividing candies

In Figure 2, the teacher used candies as context to challenge students to divide candies fairly. The teacher didn't give direct instruction to solve the division algorithm at first, instead giving them activities by dividing candies fairly to form a basic understanding. They were asked to share 573 candies from candies packed into 4 boxes. Students did the task with their teammates. First, they put 10 candies from candy packs into plastic bags. They repeated the

activity until there were only 3 candies left. Then, they share the candies in plastic bags for each set to get 1 hundred. Then, they traded the remaining hundred for 10 tens and combined with the remaining tens. Next, traded the remaining tens for 10 ones and combined them with the remaining ones. After building students' learning experiences with a context, the teacher connected their learning experiences with the division algorithm. Students could individually and collaboratively solve mathematics problems with a division algorithm which can be shown in Figure 3.

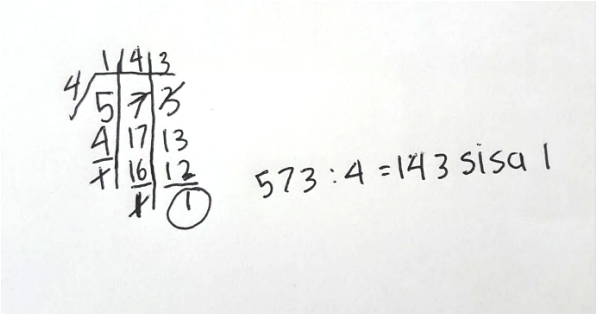

Figure 3. Student's standard algorithm in the division during the lesson

Researchers noted some important evidence during the learning process. First, no student was excited to get the work done. All students did a collaborative job of sharing candies fairly and got the work on time. There were no students who ignored the teacher's orders and made fun with friends which disturbed the conducive atmosphere of the class. Second, before this study occurred, students had difficulties in practicing the division algorithm, but through the fair-shared method, they performed better in demonstrating the procedure. Third, some students could create another question about division and solve it with the division algorithm as self-taught. Unexpectedly, several students also had the idea to continue making questions about division related to the real world at home, for example making questions in the context of dividing longan fruits to younger siblings. Fourth, this method allowed intelligent students to take the initiative to teach other students who found it difficult.

5. Discussion

Based on the findings, students' self-regulated learning performed best when they learned the division algorithm with the fair-share method. It was proven based on self-regulated learning final score, dimensions score and learning activity observation. In this study, the teacher constructed students' knowledge by giving them activities to divide candies fairly to form a basic understanding of the division algorithm. It turned out, that this activity nourished students' self-regulated learning. In line with Suhandi & Kurniasri (2019), contextual teaching could lift students' self-regulated learning.

The fair-shared method is a tool for delivering context that fosters self-regulated learning. The method used real objects which were candies to teach division. Students in grade four were at the concrete operational stage of development. Children enter the concrete operations stage between the ages of seven and eleven. Operations in this stage refer to the logical Jean Piaget standards used in problem-solving (Boeree, 2006). The child starts to lose their egocentric attitude when they enter this stage of applying logical ideas (Huitt & Hummel, 2003). With the use of real objects, students more easily understood the division algorithm. Usually, teachers tend to teach "porogapit" method first in teaching division algorithms. This method has been known to Indonesian students for quite some time, but the downside is that students whose cognitive level is not classified as high tend to find it difficult to use this method. Only students with a high cognitive level can apply the porogapit procedure correctly, and that number is very small compared to the number of students in the class (Khomaria & Robandi, 2023). Learning the division algorithm with the fair-shared method first has proven to be easier for students than the "porogapit".

As students were glued to the learning activity, they unconsciously learned on their own. Students became more engaged with learning activities and showed learning interest. Based on observation, there were no students who ignored the teacher's order and made fun with friends which disturbed the conducive atmosphere of the class. They also show interest in learning by paying attention to detail order and successfully completing all learning assignments on time. In line with Nainggolan (2023) there was a positive relationship between interest in learning and active learning. The fair-shared method indeed enriched students learning attitude which impacted their self-regulated learning. As shown in Table 4 and Figure 1, three out of ten students performed very well in self-regulated learning. Those students indeed the top three of the class in academic outcome. Five students had a high level of self-regulated learning. Thus, there were only two students who had medium level.

To go deep into what dimension performs higher with fair share methods, take a closer look at Table 5. First, the value and interest dimension score the highest with 10 points. It is categorized as very good. This dimension corresponds to motivational components. It points out students' behavior toward how excited they are in learning the division algorithm and how it impacts the way they learn. Students actively used candies to construct their learning experience in dividing fairly. Dividing candies was part of concrete media. The use of concrete media is more entertaining, visually stimulating, and learning-motivating (Widiana et al., 2020).

Second, the retrieving strategy dimension score is as high as the value and interest dimension. It is categorized as very good. It evaluates students' ability to retrieve which strategy they use for dividing candies fairly. Students did not count the candies one by one as a strategy to solve problems quickly. Their initiative to choose this strategy has grown as they solve problems more quickly. This kind of activity reminds them of dividing things in their daily lives. Exposing them to mathematical modeling through dividing candies can be valuable components in supporting the modeling process (Çakmak Gürel, 2023).

Third, the problem-solving score is 8 which is very good. Items in problem-solving focus on how to solve the problem coherently. This dimension score is not as high as those two dimensions. Some students found difficulties in solving the problems. It occurred in students with medium levels of self-regulated learning. They were unable to follow step by step due to a lack of understanding. These students still need the teacher to tell them what to do in the instructions to solve the problem. They could not do it on their own. Students with mathematical difficulties perform lower than their typically developing peers (Powell et al., 2020). On the other hand, students with high and very high levels of self-regulated learning found no difficulties in solving the problem.

Fourth, the self-control dimension scored the lowest but still in the good category. Self-control items are generated as metacognitive strategies relating to the ability that manage cognitive processes. Students with high and very high levels of self-regulated learning perform better in self-control. They could create another question about division and solve it with the division algorithm as self-taught. Unexpectedly, several students also had the idea to continue making questions about division related to the real world at home, for example making questions in the context of dividing longan fruits to younger siblings. This initiative came from students who have high and very high levels of self-regulated learning. Exposing them to dividing fairly can teach them life skills that are very necessary in the real world so that students do not become greedy individuals.

Moreover, very high-level students evaluated themselves through their classmates and reflected on the problems they encountered. Surprisingly, this method allowed intelligent students to take the initiative to teach other students who found it difficult. However, they only taught a few students closest to their seats. But this was a big step to facilitate outperformer students to practice what they have learned by helping friends in need. The remaining students did not do this. On item number 11, students with medium levels of self-regulated learning did not count candy carefully in which they faced difficulties. Furthermore, the average score of self-regulated dimensions is categorized as very good.

6. Conclusion

Based on the result and discussion, it is unveiled that a teaching division algorithm with a fair-share method could nourish students' self-regulated learning. Proven that only 20% of students had moderate levels of self-regulated learning; 50% of students had high levels of self-regulated learning; and 30% of students had very high levels of self-regulated learning. Furthermore, the average score of self-regulated dimensions is classified as very good. The fair-share method also impacted students' behavior to be excited in learning and exposing them to mathematical modeling through the dividing candies activity.

Limitation

The data acquired from this study was limited because it only occurred in one of the public schools in Kebumen Regency, Jawa Tengah. Furthermore, self-regulated learning scales and students' learning activity observation sheets were used as data collection tools.

Recommendation

In this study, a fair-share method is limited to enhanced self-regulated learning. Measuring students' competencies or other psychological conditions might offer more information. These results could inspire more research focusing on methods to construct students' learning experiences.

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Conflict of Interest

The research contains nothing that suggests a conflict of interest.

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