

Analysis of Mathematical Creative Thinking Ability after Experiencing Learning of Expansions of Numbers Toward Realistic Mathematics Learning Approach

Erwin^{1*}, Hongki Julie²

^{1,2} Magister Pendidikan Matematika, Universitas Sanata Dharma Yogyakarta

benerwin4848@gmail.com

*Corresponding author

Received: April, 2024 | Revised: Januari, 2025 | Accepted: Februari, 2025 |

Published: April, 2025

Abstract:

This research aims to analyze the mathematical creative thinking ability of grade VIII students after participating in Realistic Mathematics Learning (PMR) approach on the material of Exponential Number at Bruder Junior High School, Pontianak. The research method used was design research. The subjects in this research were VIII grade students at Bruder Junior High School, Pontianak in the 2023/2024 academic year, with the experiment class in VIII-B and the research class in VIII-G. Data collection was done through tests, interviews, and documentation. The instruments used in the data collection process were test sheets, and interview guideline sheets. The instrument and data validation technique used in this research is validation of the supervisor and uses triangulation theory to test the validity of data obtained from the field. The data analysis process in this research is data reduction, data presentation, conclusion drawing. The results of this research are out of 27 students, three students (11%) have high creative thinking skills, 22 students (81.5%) have moderate creative thinking skills, and two students (7.5%) have low creative thinking skills.

Keywords: mathematical creative thinking ability, power numbers, realistic mathematics learning.

Introduction

In daily life and in the learning process, thinking skills are essential, especially mathematical creative thinking skills. This ability is very important to meet the demands of an era that continues to develop and be complex (Wijaya, 2012). The rapid development of science and technology requires all individuals to master information and knowledge with critical, logical, systematic, and creative thinking (Handoko, 2017). Mathematics is one of the effective educational programs in developing these abilities (Siregar, 2019). Students' ability to think mathematically creatively is the key to meeting current and future needs.

In the Big Indonesian Dictionary (KBBI) Online, "creative" is defined as having creative power, the ability to create, and being creative. Meanwhile, "mathematical"



Content from this work may be used under the terms of the [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/) that allows others to share the work with an acknowledgment of the work's authorship and initial publication in this journal.

means related to mathematics, mathematical in nature, very certain, and precise. From this definition, the ability to think mathematically creatively is the ability to find new ideas that are different, uncommon, very certain, and precise. According to Munandar (2009) creative thinking is the ability to see various possible solutions to a problem. Meanwhile, according to Satidarma (2003), creative thinking is a form of thinking to find new relationships, get answers, methods or new ways to deal with a problem. Then according to Siswono (2008), creative thinking is a mental activity that is used by someone to build new ideas or concepts fluently and flexibly. In assessing mathematical creative thinking skills, indicators of creative thinking skills are needed. In this study, the researcher chose to use three indicators proposed by Silver (1997), namely, Fluency: Students are able to solve problems by providing various answers; Flexibility: Students are able to solve problems not only by using one method but can also provide other methods from different perspectives and Originality: Students are able to solve problems with new solutions or answers that are not usually done by other students.

Creative thinking skills, whether in mathematics or other fields, are essential life skills. They are needed in everyday life and have a lasting impact on the future. Creative thinking skills help individuals face challenges, demands, and global competition in an era of rapid change (Wijaya, 2012). Students who develop these skills become more flexible, open, and adaptable to everyday situations and problems (Wijaya, 2012). Based on the understanding of experts such as Munandar (2009), Sudarma (2013), and Siswono (2004), creative thinking is the ability to see various possible solutions to problems. Budiarto (2013) added that mathematical creative thinking skills involve the process of thinking based on data and information, producing various possible answers from different perspectives.

Research conducted by Ishaq Nuriadin and Krisna Satrio Perbowo (2013) shows that students with mathematical creative thinking skills are able to solve problems creatively, with various perspectives. Siswono (2004) also emphasized the need for creative thinking skills in mathematics learning, considering the complexity of mathematical knowledge that provides opportunities for creative thinking and finding innovative solutions. Research on the analysis of students' mathematical creative thinking skills with a realistic mathematics approach has been widely conducted. Such as research conducted by Rohani (2015) in one of the State Senior High Schools in South Kualuh. The purpose of this study was to (1) Describe the effectiveness of realistic mathematics learning in teaching three-dimensional topics in class X of high school, (2) Compare the creative thinking skills of students who follow realistic mathematics learning with the creative thinking skills of students who follow conventional learning. The population of this study was all students of class X of State Senior High School 1 Kualuh Selatan in the 2013/2014 academic year consisting of 7 parallel classes. The subjects of the study were selected 2 classes randomly to be assigned to the experimental group and the control group. The data analysis technique used was pre-test and post-test data analysis. The type of research used was the quasi-

experimental method. The results of this study are that the mathematical creative thinking ability of students who receive learning with realistic mathematics education (RME) is better than students who receive regular learning.

Research on the analysis of students' mathematical creative thinking abilities with a realistic mathematics approach has also been conducted by Dwi Lestari, et al. (2018) at one of the State Junior High Schools in Palembang. The purpose of this study was to determine the effect of the Indonesian Realistic Mathematics Education Approach (PMRI) on students' creative thinking abilities at the school. The study was conducted at State Junior High School 9 Palembang with a population of all grade VII students consisting of 11 classes and the subjects were VII.9 as the experimental class and class VII.5 as the comparison class. The determination of the class was determined using the cluster random sampling technique. Data collection used observation and tests. The type of research used is true experimental design with a posttest only control design. The results of this study are that students' creative thinking abilities in the experimental class are higher than those in the control class. Statistical calculations obtained from the test results produce t count = 3.248 and t table = 2.001, so that t count > t table which causes H_0 to be rejected and H_a to be accepted. Thus, it can be concluded that there is an influence of the Indonesian Realistic Mathematics Education (PMRI) approach on students' creative thinking skills.

Based on the studies that have been conducted, it can be concluded that mathematical creative thinking skills have a positive correlation with mathematics learning outcomes. Research by Nuriadin (2013) and Supardi (2015) showed a positive relationship between mathematical creative thinking skills and students' mathematics learning achievement. Students with high creative thinking skills tend to achieve higher learning achievement. However, the results of the 2018 PISA test showed a decline in Indonesian students' achievement in mathematics, reflecting low high-level thinking skills (HOTS) and especially creative thinking skills. Another contributing factor is the learning system that is still centered on teachers, inhibiting student creativity (Saragih, 2017). The realistic mathematics approach (PMR) is an alternative to overcome this obstacle. PMR links learning to the context of everyday life, making the material more real and relevant. Previous studies have shown that PMR can improve students' mathematical creative thinking skills (Siregar, 2019; Amiruddini et al., 2020). Based on the results of the researcher's interview with the eighth grade mathematics teacher of SMP Bruder Pontianak, it shows that students' mathematical creative thinking skills are still low and need to be improved. The problems encountered are that students have difficulty in working on story problems and open-ended questions. In addition, there are many students who do not like mathematics lessons.

Based on this background, the researcher is interested in conducting research on students' mathematical creative thinking skills. This study is entitled "Analysis of the Mathematical Creative Thinking Skills of Class VIII Students of SMP Bruder Pontianak

After Experiencing Exponential Number Material Learning Using the Realistic Mathematics Learning Approach." This study aims to analyze the extent to which the use of PMR can improve students' mathematical creative thinking skills.

Research Methods

The type of research used by researchers in this study is design research. The purpose of the study was to analyze the mathematical creative thinking skills of grade VIII students after participating in learning with the Realistic Mathematics Learning (PMR) approach on the material of Power Numbers at SMP Bruder, Pontianak. The subjects of this study were grade VIII students at SMP Bruder, Pontianak in the 2023/2024 academic year, with a trial class in class VIII-B (21 students) and a research class in class VIII-G (27 students). Data collection techniques used tests, interviews and documentation. The main instrument in this study was the researcher, while the auxiliary instruments were test sheets and interview guidelines. The data analysis used was data reduction, data presentation and drawing conclusions. Data reduction was carried out by classifying the results of student completion, namely (1) Students who have the correct strategy and steps and almost all of their answers are correct from all test questions (total score ≥ 76.22); (2) Students who have the correct strategy and steps and the answers are correct, but not all answers are correct (total score > 15.05 and < 76.22); (3) Students who have the strategy and steps but the answers are not correct (total score ≤ 15.05).

In this study, the author will analyze student answers based on indicators of mathematical creative thinking according to Silver (1997), namely: 1) Fluency: Fluency is the ability to solve problems with various (more than one) answers that are correct. 2) Flexibility: Flexibility is the ability to solve problems in different ways. 2) Originality: Novelty is the originality of ideas created in responding to commands. From the indicators of mathematical creative thinking according to Silver (1997), the researcher measured student answers with guidelines for scoring students' creative thinking abilities using the rubric scoring criteria developed by Bosch (1997).

Results and Discussions

In this study, the number of students in class VIII-G who took the test was 27 people. From the 27 students, the researcher then selected 5 students whose test results would be analyzed and interviews would be conducted. From the 5 students selected, the selection was based on the category of creative thinking ability scores obtained by students, namely the category of students with high, medium and low creative thinking abilities. The following is a classification of student answers based on each question as a whole, the classification can be seen in table 1.

Table 1. Classification of Student Answers

Question	High Creativity	Medium Creativity	Low Creativity
1	-	19 students	8 students
2	7 students	19 students	1 student
3a	5 students	19 students	3 students
3b	5 students	19 students	3 students

The test results that have been analyzed and scored based on indicators of mathematical creative thinking skills and interviews were conducted to confirm students' answers in solving the problems given by the researcher. The researcher randomly selected 5 students based on the results of the completion that met the categories, 1) having the correct strategy and steps and almost all of the answers were correct from all the test questions (total score ≥ 76.22); 2) having the correct strategy and steps and the answers were correct, but not all of the answers were correct (total score > 15.05 and < 76.22); 3) having a strategy and steps but the answers were not correct (total score ≤ 15.05). Based on the student selection category, the researcher then interviewed 5 students who were classified based on the results of the completion, namely a) Students Ya and Yb have the correct strategy and steps and the answers are almost all correct from all the test questions (total score ≥ 76.22); b) Students Yc and Yd have the correct strategy and steps and the answers are correct, but not all answers are correct (total score > 15.05 and < 76.22); c) Student Ye has the strategy and steps but the answers are not correct (total score ≤ 15.05). The following is a classification of students who meet the criteria based on the results of the completion, the classification can be seen in table 2.

Table 2. Student Classification

Student Code	Question Score 1	Question 2 Score	Question 3a Score	Question 3b Score	Total Score	Creativity Level
Ya	33.33	100	100	100	83.33	Tall
Y b	33.33	83.33	100	100	79.16	Tall
Y c	16.66	100	66.66	66.66	62.50	Currently
Y d	0	91.66	25	25	35.41	Currently
Ye	0	0	25	25	12.50	Low

Students' Mathematical Creative Thinking Ability (Ya)

Question 1

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 3 Summary of Student Ya Question 1

Creative Thinking Ability Indicators	Score
1	0
2	1
3	3

$$KBK = \frac{0+1+3}{12} \times 100 = 33,33$$

Based on the summary table of students' achievement of mathematical creative thinking ability in the research process of question 1, the total score of student Ya's creative thinking ability in question 1 is 33.33. Based on table 3, it can be concluded that the level of student Y a's creative thinking ability in question 1 is moderate.

Question 2

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 4 Summary Ya Question 2

Creative Thinking Ability Indicators	Score
1	4
2	4
3	4

$$KBK = \frac{4+4+4}{12} \times 100 = 100$$

Based on the summary table of the achievement of students' mathematical creative thinking abilities in the research process of question 2, the total score of student Ya creative thinking abilities on question 2 is 100. Based on table 4, it can be concluded that the level of student Y a's creative thinking abilities on question 2 is high.

Question 3a

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 5. Summary of Student Ya Question 3a

Creative Thinking Ability Indicators	Score
1	4
2	4
3	4

$$KBK = \frac{4+4+4}{12} \times 100 = 100$$

Based on the summary table of the achievement of students' mathematical creative thinking abilities in the research process of question 3a, the total score of

student Ya's creative thinking ability on question is 100. Based on table 5, it can be concluded that the level of student Ya's creative thinking ability on question 3a is high.

Question 3b

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 6. Summary of Students Ya Question 3b

Creative Thinking Ability Indicators	Score
1	4
2	4
3	4

$$KBK = \frac{4+4+4}{12} \times 100 = 100$$

Based on the summary table of the achievement of students' mathematical creative thinking abilities in the research process of question 3b, the total score of student Y a's creative thinking abilities on question 3b is 100. Based on table 6, it can be concluded that the level of student Ya's creative thinking abilities on question 3b is high.

Student' Mathematical Creative Thinking Ability (Yb)

Question 1

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 7. Summary of Student Yb Question 1

Creative Thinking Ability Indicators	Score
1	0
2	1
3	3

$$KBK = \frac{0+1+3}{12} \times 100 = 33,33$$

Based on the summary table of students' achievement of mathematical creative thinking ability in the research process of question 1, the total score of student Yb's creative thinking ability on question 1 is 33.33. Based on table 7, it can be concluded that the level of student Yb's creative thinking ability on question 1 is moderate.

Question 2

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not

only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 8. Summary of Student Yb Question 2

Creative Thinking Ability Indicators	Score
1	3
2	3
3	4

$$KBK = \frac{3+3+4}{12} \times 100 = 83,33$$

Based on the summary table of students' achievement of mathematical creative thinking ability in the research process of question 2, the total score of student Yb's creative thinking ability in question 2 is 83.33. Based on table 8, it can be concluded that the level of student Yb's creative thinking ability in question 2 is high.

Question 3a

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 9. Summary of Student Yb Question 3a

Creative Thinking Ability Indicators	Score
1	4
2	4
3	4

$$KBK = \frac{4+4+4}{12} \times 100 = 100$$

Based on the summary table of the achievement of students' mathematical creative thinking abilities in the research process of question 3a, the total score of student Yb's creative thinking ability on question 3a is 100. Based on table 9, it can be concluded that the level of student Yb's creative thinking ability on question 3a is high.

Question 3b

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 10. Summary of Student Yb Question 3b

Creative Thinking Ability Indicators	Score
1	4
2	4
3	4

$$KBK = \frac{4+4+4}{12} \times 100 = 100$$

Based on the summary table of the achievement of students' mathematical creative thinking abilities in the research process of question 3b, the total score of student Yb creative thinking ability on question 3b is 100. Based on table 10, it can be concluded that the level of student Yb's creative thinking ability on question 3b is high.

Student' Mathematical Creative Thinking Ability (Yc)

Question 1

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 11. Summary of Student Yc Question 1

Creative Thinking Ability Indicators	Score
1	0
2	0
3	2

$$KBK = \frac{0+0+3}{12} \times 100 = 16,66$$

Based on the summary table of students' achievement of mathematical creative thinking ability in the research process of question 1, the total score of student Yc's creative thinking ability in question 1 is 16.66. Based on table 11, it can be concluded that the level of student Yc's creative thinking ability in question 1 is moderate.

Question 2

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 12. Summary of Student Yc Question 2

Creative Thinking Ability Indicators	Score
1	4
2	4
3	4

$$KBK = \frac{4+4+4}{12} \times 100 = 100$$

Based on the summary table of the achievement of students' mathematical creative thinking abilities in the research process of question 2, the total score of student Yc's creative thinking ability on question 2 is 100. Based on table 12, it can be concluded that the level of student Yc's creative thinking ability on question 2 is high.

Question 3a

Based on the summary table of the achievement of students' mathematical creative thinking abilities in the research process of question 2, the total score of student Y c's creative thinking ability on question 2 is 100. Based on table 2, it can be concluded that the level of student Y c's creative thinking ability on question 2 is high.

Table 13. Summary of Student Yc Question 3a

Creative Thinking Ability Indicators	Score
1	2
2	2
3	4

$$KBK = \frac{2+2+4}{12} \times 100 = 66,66$$

Based on the summary table of students' achievement of mathematical creative thinking ability in the research process of question 3a, the total score of student Yc's creative thinking ability in question 3a is 66.66. Based on table 13, it can be concluded that the level of student Yc's creative thinking ability in question 3a is moderate.

Question 3b

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 14. Summary of Student Yc Question 3b

Creative Thinking Ability Indicators	Score
1	2
2	2
3	4

$$KBK = \frac{2+2+4}{12} \times 100 = 66,66$$

Based on the summary table of students' achievement of mathematical creative thinking ability in the research process of question 3a, the total score of student Yc's creative thinking ability in question 3a is 66.66. Based on table 14, it can be concluded that the level of student Yc's creative thinking ability in question 3a is moderate.

Student' Mathematical Creative Thinking Ability (Yd)

Question 1

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 15. Summary of Student Yd Question 1

Creative Thinking Ability Indicators	Score
1	0
2	0
3	0

$$KBK = \frac{0+0+0}{12} \times 100 = 0$$

Based on the summary table of the achievement of students' mathematical creative thinking abilities in the research process of question 1, the total score of student Yd's creative thinking ability on question 1 is 0. Based on table 15, it can be concluded that the level of student Yd's creative thinking ability on problem I is low.

Question 2

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 16. Summary of Student Yd Question 2

Creative Thinking Ability Indicators	Score
1	4
2	3
3	4

$$KBK = \frac{4+3+4}{12} \times 100 = 91,66$$

Based on the summary table of students' achievement of mathematical creative thinking ability in the research process of question 2, the total score of student Yd's creative thinking ability in question 2 is 91.66. Based on table 16, it can be concluded that the level of student Yd's creative thinking ability in question 2 is high.

Question 3

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 17. Summary of Student Yd Question 3a

Creative Thinking Ability Indicators	Score
1	1
2	1
3	1

$$KBK = \frac{1+1+1}{12} \times 100 = 25$$

Based on the summary table of students' achievement of mathematical creative thinking ability in the research process of question 3a, the total score of student Yd's creative thinking ability in question 3a is 25. Based on table 17, it can be concluded that the level of student Yd's creative thinking ability in question 3a is low.

Question 3b

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 18. Summary of Student Yd Question 3b

Creative Thinking Ability Indicators	Score
1	1
2	1
3	1

$$KBK = \frac{1+1+1}{12} \times 100 = 25$$

Based on the summary table of the achievement of students' mathematical creative thinking abilities in the research process of question 3b, the total score of student Y d's creative thinking ability on question 3b is 25. Based on table 18, it can be concluded that the level of student Y d's creative thinking ability on question 3b is low.

Student' Mathematical Creative Thinking Ability (Ye)

Question 1

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 19. Summary of Student Ye Question 1

Creative Thinking Ability Indicators	Score
1	0
2	0
3	0

$$KBK = \frac{0+0+0}{12} \times 100 = 0$$

Based on the summary table of the achievement of students' mathematical creative thinking abilities in the research process of question 1, the total score of student Ye's creative thinking ability on question 1 is 0. Based on table 19, it can be concluded that the level of student Ye's creative thinking ability on question 1 is low.

Question 2

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not

only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 20. Summary of Student Ye Question 2

Creative Thinking Ability Indicators	Score
1	0
2	0
3	0

$$KBK = \frac{0+0+0}{12} \times 100 = 0$$

Based on the summary table of the achievement of students' mathematical creative thinking abilities in the research process of question 2, the total score of student Ye's creative thinking ability on question 2 is 0. Based on table 20, it can be concluded that the level of student Ye's creative thinking ability on question 2 is low.

Question 3a

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 21. Summary of Student Ye Question 3a

Creative Thinking Ability Indicators	Score
1	1
2	1
3	1

$$KBK = \frac{1+1+1}{12} \times 100 = 25$$

Based on the summary table of the achievement of students' mathematical creative thinking abilities in the research process of question 3a, the total score of student Ye's creative thinking ability on question 3a is 25. Based on table 21, it can be concluded that the level of student Ye's creative thinking ability on question 3a is moderate.

Question 3b

Indicators of creative thinking ability are students: (1) Students are able to solve problems by providing various answers; (2) Students are able to solve problems not only by using one method but can also provide other methods from different points of view; (3) Students are able to solve problems with new solutions or answers that are not usually used by other students.

Table 22. Summary of Student Ye Question 3b

Creative Thinking Ability Indicators	Score
1	1
2	1
3	1

$$KBK = \frac{1+1+1}{12} \times 100 = 25$$

Based on the summary table of the achievement of students' mathematical creative thinking abilities in the research process of question 3b, the total score of student Ye's creative thinking ability on question 3b is 25. Based on table 22, it can be concluded that the level of student Ye's creative thinking ability on question 3b is moderate.

Conclusions and Suggestions

In this study, the test was conducted in the research class after the Realistic Mathematics Learning approach was applied. Based on the students' answers that have been analyzed with indicators and scoring of creative thinking ability. Based on the results of the analysis of students' answers to the test given, it can be concluded that out of 27 students, there are three students (11%) who have high creative thinking ability, 22 students (81.5%) who have moderate creative thinking ability, and two students (7.5%) who have low creative thinking ability.

Based on the results of the analysis of students' answers from each number, it can be concluded that: in answering question number 1, out of 27 students who took the test, there were 19 students (70%) who had moderate creative thinking abilities and eight students (30%) who had low creative thinking abilities. In question number 2, there were seven students (26%) who had high creative thinking abilities, 19 students (70%) who had moderate creative thinking abilities, and one student (4%) who had low creative thinking abilities. Then, in question number 3a, there were five students (19%) who had high creative thinking abilities, 19 students (70%) who had moderate creative thinking abilities, and three students (11%) who had low creative thinking abilities. While in question number 3b, there were five students (19%) who had high creative thinking abilities, 29 students (70%) who had moderate creative thinking abilities, and three students (11%) who had low creative thinking abilities.

References

- Amiruddini, Aula Aulia, et al. (2020). Analysis of Students' Creative Thinking Abilities with the Realistic Mathematics Education (RME) Approach . Semarang: Universitas PGRI Semarang.
- Bosch, N. (1997). Rubric for creative thinking skills evaluation. Retrieved from <https://adifferentplace.org/creativethinking.html>.

- Budiarto, FD (2013). The Effect of Using the Open-Ended Approach on Improving the Ability of Mathematical Creative Thinking in Junior High School Students . Journal of Mathematics Education "SYMMETRY". 2(2), 294-303.
- Handoko, H. (2017). Savi Model Mathematics Learning Based on Discovery Strategy for Grade X Three Dimension Material . EduMa.
- Big Indonesian Dictionary Online . Creative . <https://kbbi.kemdikbud.go.id/entri/kreatif> accessed on December 20, 2023, at 20.34 WIB.
- Lestari, Dwi, et al. (2018). Students' Creative Thinking Ability with the Indonesian Realistic Mathematics Education Approach (PMRI). Palembang: Mathematics Education, Raden Fatah State Islamic University.
- Munandar, Utami. (2009). Developing the Creativity of Gifted Children . Jakarta: Rineka Cipta.
- Nuriadin, Ishaq and Krisna Satrio Perbowo. (2013). Correlation analysis of mathematical creative thinking ability towards mathematics learning outcomes of students of SMP Negeri 3 Luragung Kuningan, West Java . Cimahi: STKIP Siliwangi.
- Rohani. (2015). Mathematics Learning Using Realistic Mathematics Education (RME) Towards Students' Creative Thinking Ability in Three Dimensional Material . Rantauprapat: STKIP Labuhan Batu.
- Saragih, S. (2017). Developing Learning Model Based on Local Culture and Instrument for Mathematical Higher Order Thinking Ability International Education Studies . Canadian Center of Science, Vol. 10, no. 6.
- Siregar, RN (2019). Development of Learning Tools Based on Realistic Approach Assisted by ICT to Improve Creative Thinking Skills and Self-Efficacy of Students of Al-Ulum Private High School Medan. Medan : Al-Washliyah Muslim Nusantara University.
- Siswono, TYE (2004). Identification of students' creative thinking processes in mathematical problem posing guided by the Wallas model and creative problem solving (CPS) . Mathematics Education Bulletin, 6(2), 1-16.
- Siswono, Tatag Yuli Eko. (2004). Task Design to Identify Students' Creative Thinking Abilities in Mathematics . www.tatagyes.files.wordpress.com received on December 19, 2023, at 18.02 WIB.
- Sudarma, M. (2013). Developing Creative Thinking Skills . Jakarta: PT RajaGrafindo Persada.

Supardi US (2012). The Influence of Realistic Mathematics Learning on Mathematics Learning Outcomes Reviewed from Learning Motivation . Jurnal Cakrawala Pendidikan, June 2012, Year XXXI, No. 2.

Wijaya, Ariyadi. (2012). Realistic Mathematics Education, An Alternative Approach to Mathematics Learning . Yogyakarta: Graha Ilmu.