

Analysis of Students' Creative Thinking Ability in Solving Problems on Mts Yaspi-Punti Flat Figure Material

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Abstract

Analysis of Students' Creative Thinking Ability in Solving Problems on Mts Yaspi-Punti Flat Figure Material. The aim of the research is to explore and describe the mathematical creative thinking abilities of class VII MTs YASPI-Punti students in solving problems on flat shapes. The type of research is descriptive research. Meanwhile, the approach is a qualitative approach. Research subjects are based on the level of mathematical creative thinking ability, namely high creative, medium creative and low creative categories. Data was obtained using written test instruments. The analysis technique uses qualitative descriptive analysis techniques. The results of the research show that subjects with the ability to think creatively can easily solve problems well without any difficulty at all so that subjects with creative abilities can fulfill the four indicators of creative thinking ability easily, namely Fluency, Flexibility, Originality and Details (Elaboration). Subjects with less creative abilities cannot expand an idea and detail an answer. So it is concluded that subjects with sufficient creative abilities can only fulfill the three indicators of creative thinking ability, namely Fluency, Flexibility and Originality. Subjects with non-creative abilities can only describe the shape of questions in finding the area of a square, while subjects cannot develop questions in various rectangular shapes. Cannot understand and solve questions well and clearly from various types of quadrilaterals and cannot expand an idea and detail an answer. So it can be concluded that subjects with non-active abilities can only fulfill one Fluency indicator.

Keywords: Ability to think creatively, solve geometry problems, flat shapes.

Abstrak

Analisis Kemampuan Berpikir Kreatif Siswa Dalam Menyelesaikan Soal-Soal Pada Materi Bangun Datar Mts Yaspi-Punti. Tujuan penelitian untuk mengeksplorasi dan mendeskripsikan kemampuan berfikir kreatif matematis siswa kls VII MTs YASPI-Punti dalam menyelesaikan soal-soal pada materi bangun datar. Jenis penelitian adalah penelitian deskriptif. Sedangkan Pendekatan yaitu pendekatan kualitatif. Subjek penelitian berdasarkan tingkat kemampuan berfikir kreatif matematis yaitu kategori kreatif tinggi, kreatif sedang dan kreatif rendah. Data diperoleh menggunakan instrumen tes tertulis. Teknik analisis menggunakan teknik analisis deskriptif kualitatif. Hasil penelitian menunjukkan Subjek dengan kemampuan berfikir kreatif dapat dengan mudah menyelesaikan soal dengan baik tanpa ada kesusahan sama sekali sehingga subjek berkemampuan kreatif dapat memenuhi keempat indikator dari kemampuan berfikir kreatif dengan mudah yaitu Kelancaran (Fluency), Keluwesan (Flexibility), Keaslian (Originality) dan Keterincian (Elaboration). Subjek berkemampuan kurang kreatif tidak dapat memperluas suatu gagasan dan merinci sebuah jawaban. Jadi disimpulkan bahwa subjek berkemampuan cukup kreatif hanya dapat memenuhi ketiga indikator kemampuan berfikir kreatif yaitu Kelancaran (fluency), Keluwesan (Flexibility) dan Keaslian (Originality). Subjek berkemampuan tidak kreatif hanya dapat menggambarkan bentuk soal dalam mencari luas persegi sedangkan subjek tidak dapat mengembangkan pertanyaan dalam berbagai macam bentuk segi empat. Tidak dapat memahami dan menyelesaikan pertanyaan dengan baik dan jelas dari berbagai macam jenis segi empat dan tidak dapat memperluas suatu gagasan dan merinci sebuah jawaban. Jadi dapat disimpulkan bahwa subjek berkemampuan tidak kreatif hanya dapat memenuhi satu indikator Kelancaran (Fluency).

Kata Kunci: Kemampuan berfikir kreatif, menyelesaikan soal geometri, Bangun Datar.

INTRODUCTION

Education has a very determining role in the development and self-realization of individuals, especially for the development of the nation and state. The aim of education in general is to provide an environment that allows students to develop their talents and abilities optimally, so that they can realize themselves and function fully, in accordance with their personal needs and the needs of

society. One of the basic sciences of education that students must master is mathematics because mathematics cannot be separated from everyday human life.

Mathematics is one of the subjects taught in the school curriculum which studies the science of logic, regarding shape, arrangement, quantity and concepts that are related to one another in large numbers which are divided into three fields, namely algebra, analysis and

geometry (Lestari, 2015). One of the functions of providing mathematics subjects is as a tool for solving problems. Mathematics needs to be taught in schools because mathematics is also an educational field that has the potential to improve the thinking skills of every student because with mathematics, students are given the opportunity to apply their thinking skills so that their estimates can refer to the knowledge and experience they have, and are easier to understand, and resolve various existing problems (Zetriuslita, 2016). In the mathematics learning process there needs to be an increase and emphasis on higher level thinking abilities. One of these high-level thinking abilities is the ability to think creatively mathematically (Purwati, 2019).

The importance of creative abilities is also stated in Government Regulation Number 17 of 2010 concerning Management and Implementation of Education which states that the aim of implementing primary and secondary education is to build a foundation for the development of students' potential to become knowledgeable, capable, critical, creative and innovative human beings (Purwaningrum, 2016). Thus, creative thinking skills are very important to develop in school. However, the fact that the ability to think creatively is not optimal is shown by the low creative thinking ability of students as evidenced by the results of the Trend International Mathematics and Science Study (TIMSS) which states that the level of creative thinking ability of students in Indonesia is relatively low, because only 2% of the participants Indonesian students who are able to solve problems that require creative thinking skills in solving them (Ismara, et al. 2017).

The ability to think creatively is a high-level thinking process that is rarely trained. This can be seen in the field of education, especially in mathematics subjects which emphasize more on memorization and reasoning concepts as well as finding the correct answers to mathematics questions (Hidayat, 2018). Creative thinking refers to students' ability to generate and develop ideas for problems and alternative solutions as well

as the individual's ability to look for new ways, strategies, ideas or ideas about how to obtain a solution to a problem (Moma, 2017). Creative thinking skills are used to help the problem solving process. Creative thinking skills can stimulate students to develop advanced thinking skills (MZ Aty, 2021).

The ability to think creatively can be identified from the skill of analyzing data and providing various problem-solving responses. High creativity indicates that a person is able to think creatively, thus the ability to think creatively is very necessary in solving students' mathematical problems (Mulyaningsih & Ratu, 2018). Thus, it can be concluded that the ability to think creatively can also be seen as a process used when an individual generates or generates new ideas. This understanding focuses on a person's creative thinking process in which to generate new ideas or combinations of ideas that can be implemented in solving new problems and the existence of these new ideas is the result of the creative thinking process. Thus, students' creative thinking abilities must be developed in order to be able to solve problems, problem well.

Problem solving is an essential and fundamental ability, because this ability is basic and very important that everyone must have (Mariam, 2019). Problem solving trains students to master higher-level thinking abilities or skills such as creative thinking abilities. Rambe (2020) also states that problem solving ability is also a student's ability to solve complex and non-routine problems. Students can understand complex problems and develop plans to solve these problems so that students can determine solutions to complex and non-routine problems. Even though the ability to think creatively is one aspect/factor in learning mathematics, in reality students rarely pay attention to developing their ability to think creatively, therefore more attention needs to be paid so that students' creative thinking abilities can be achieved well.

Based on the results of interviews with junior high school teachers, teachers still use traditional methods in teaching mathematics so that students' creative thinking abilities in

solving mathematical problems are still very low, but usually it is only students who are more active in class who are able to develop creative thinking in analyzing a problem and providing solutions to solutions. varied problems. In line with this (Muthaharah, 2018) states that the current mathematics learning is not capable of developing students' creative thinking abilities. teachers only focus on students' understanding of one concept without involving students' creativity. Students are not given the opportunity to express opinions in finding answers or methods that are different from the methods they have learned. This has an impact on students' creative thinking abilities so that their abilities are difficult to develop. For this reason, researchers want to conduct research on the analysis of students' creative thinking abilities in solving problems on flat geometric material in junior high schools.

In general, there are four indicators used to assess students' creative thinking abilities, namely fluency, flexibility, elaboration, and originality.

1. Fluency is the ability to create a large number of answers, solve problems, develop ideas, form questions, present other steps or suggestions in carrying out a task, and reveal more solutions or answers.
2. Flexibility is the ability to develop various questions and answers, recognize problems from various points of view, look for alternatives or alternative solutions, and change methods or ways of thinking.
3. Originality is the ability to raise varied and unique questions, consider unconventional ways of expressing oneself, and be able to combine unusual concepts.
4. Detail (Elaboration), is the ability to expand an idea, and combine unexpected concepts (Susanto, 2016). The reason for using flat shape material is because according to research conducted by Ekawati & Adirakasiwi (2019), giving flat material questions can identify mathematical creative thinking abilities because this material is found in class VII SMP/MTs, this material teaches about various types of quadrilaterals and shapes.

flat, area and perimeter formulas, as well as characteristics of rectangular and flat shapes. It is hoped that students will be able to find other solutions or new ideas in solving the material problems. The aim of this research, which is based on the explanation that has been presented, is to describe and determine students' mathematical creative thinking abilities in solving flat material problems.

RESEARCH METHOD

Types and Research Approaches

This type of research is descriptive research, namely describing existing data, facts and circumstances. The approach used in this research is a qualitative approach

Place and time of research

The place of this research was carried out at MTs Yaspi Punti, Soromandi District, Bima Regency.

Research subject

The research subjects were class VII students consisting of 15 female students and 6 male students, so the total number was 21 students. The object of the research is students' creative thinking abilities. However, the researcher chose 3 students taken from each group in the categories of creative, moderately creative and less creative for a more in-depth analysis of the selection of 3 students in terms of creative thinking ability test scores.

Data collection technique

The data in this research is data collected directly by the researcher, namely in the form of the results of students' work on test sheets in solving questions on flat shape material. The flat shape material questions consist of four questions derived from indicators of creative thinking abilities, as presented in the table below:

Table 1.1. Level of Students' Creative Thinking Ability

NO	Score	Levels
1	$x \leq 60$	Not creative
2	$60 < x \leq 80$	Quite creative
3	$80 < x \leq 100$	Creative

Table 1.2. Indicators of Creative Thinking Ability

NO	Indicator of creative thinking ability	Question indicator
1	Fluency	Can describe the shape of a square problem and solve it well
2	Flexibility	Can develop questions in various rectangular shapes
3	Authenticity (Originality)	Can understand and solve questions well and clearly from various types of quadrilaterals
4	Details (Elaboration)	Expanding an idea and detailing an answer

Research Instrument

1.1.1. Tests, test questions to collect data about students' creative thinking

Research result

The research results showed that there were 13 students in the less creative category, 5 students in the quite creative category and 3 students in the creative category. Students in the high score category are represented by AR, students from the medium score category by TS, and students from the low score category by SNA for deeper analysis.

The following is a description of the research subject test findings:

Subjects with creative abilities

1. A flat shape is a square with a side length of 8 cm. Make a quadrilateral whose area is the same as the area of the square along with the measurements and details of the area!

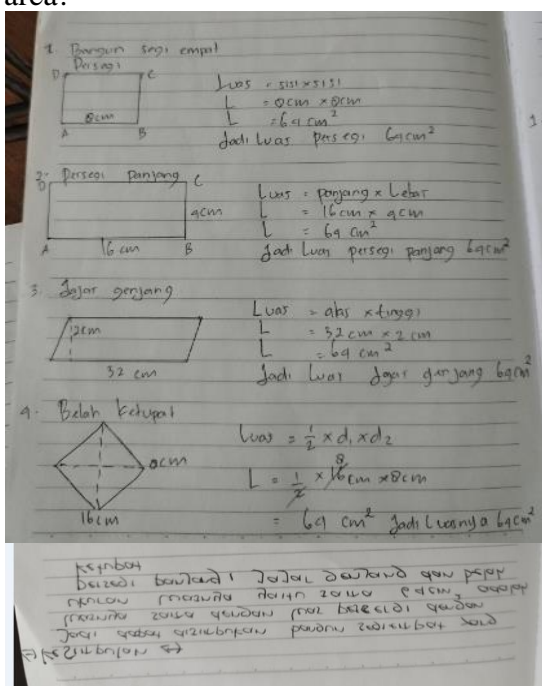


Figure 1. AR answers of creative subjects

Paying attention to the results of the work of subjects with creative abilities (AR), the subject can easily understand the question from the problem where the subject can write the question in mathematical form by describing a square, writing the square formula and finding the area of the square based on the instructions from the problem. Then the subject can easily solve the question by drawing a rectangle, parallelogram and rhombus. Furthermore, the subject can understand and solve questions well and clearly regarding various types of quadrilaterals, starting from determining formulas and finding the area of rectangles, parallelograms and rhombuses. Subjects can also expand an idea and detail an answer precisely and appropriately by making a picture of a rhombus as the final result in finding the area of a rectangle that corresponds to the area of a square. So it is concluded that the subject has creative abilities because he can fulfill the four indicators of creative thinking ability, namely Fluency, Flexibility, Originality and Elaboration.

Subjects with creative abilities are quite creative

1. A flat shape is a square with a side length of 8 cm. Make a quadrilateral whose area is the same as the area of the square along with the measurements and details of the area!

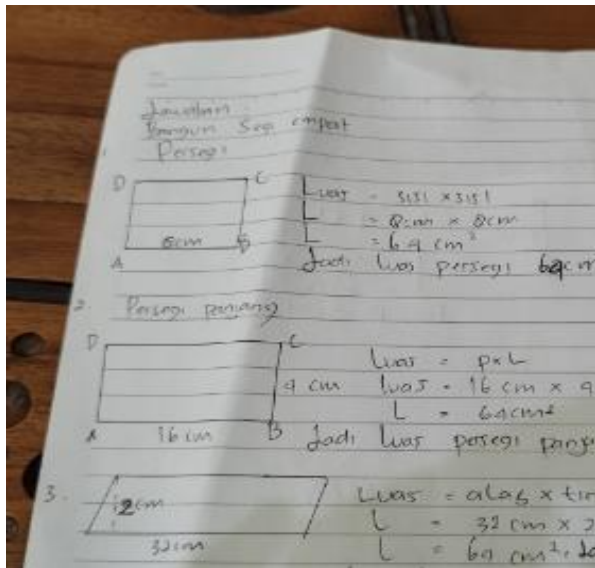


Figure 2. TS answers of subjects with quite creative abilities

Paying attention to the results of the work of subjects with moderately creative abilities (TS), the subject can easily understand the question of the problem where the subject can write the question in mathematical form by describing a square, writing the square formula and finding the area of the square based on the instructions from the problem. Then the subject can easily solve the question by drawing a quadrilateral whose area is the same as a square, namely a rectangle and a rhombus. although it is still not enough because the subject can only describe two rectangles whose area is the same as the area of the square. Furthermore, the subject can understand and solve questions well and clearly about various types of quadrilaterals, starting from determining formulas and finding the area of rectangles and parallelograms. However, it can be seen from the results of students' work that the subject cannot expand an idea and detail an answer. So it is concluded that the subject is quite creative because he can only fulfill the three indicators of creative thinking ability, namely Fluency, Flexibility and Originality.

The subject has the ability to be Uncreative

1. A flat shape is a square with a side length of 8 cm. Make a quadrilateral whose area is the same as the area of the square along with the measurements and details of the area!

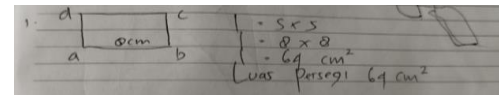


Figure 3. SNA answers of subjects with Uncreative ability

Paying attention to the results of the work of subjects with non-creative abilities (SNA), the subject can easily understand the question of the problem where the subject can write the question in mathematical form by describing a square, writing the square formula and finding the area of the square based on the instructions from the problem. However, subjects with non-creative abilities cannot develop questions in various rectangular shapes. Cannot understand and solve questions well and clearly from various types of quadrilaterals and cannot expand an idea and detail an answer. So it can be concluded that subjects with non-effective abilities can only fulfill one Fluency indicator by describing the shape of the problem as a square and solving it well.

DISCUSSION

Subjects with the ability to think creatively can fulfill the four indicators of ability think creatively easily, namely Fluency, Flexibility, Originality and Elaboration where students can easily describe the shape of a square problem, write a square formula and find the area of a square based on the instructions from the question. Subjects also easily solve questions by drawing three rectangular shapes whose area is the same as the area of a square, namely and can determine the formula for finding the area of a rectangle, parallelogram and rhombus precisely and in great detail so it is concluded that students with creative abilities can fulfill the four indicators of thinking. creative. This is in line with the results of research (Avivah & Faiziyah, 2023). Based on the results of test and interview data, students' creative thinking abilities were seen in terms of visual learning style with the first subject, namely ARF, which was able to bring out students' way of thinking smoothly so that the subject met the Fluency indicator. The subject was able to find different ways in a flexible, smooth and good manner so that it meets the flexibility indicators. The ARF subject is able to think in detail because he can draw conclusions that he has worked on, thus

fulfilling the Elaboration indicator. In solving the problem, the ARF subject worked coherently and did not appear to have difficulty in the process, so that the subject met the indicators of originality. The ARF subject was able to explain briefly and concisely a different answer from before, so it was concluded that the subject with creative abilities could fulfill the four indicators of creative thinking ability. $64cm^2$

Subjects with less creative thinking ability (TS) can only fulfill the three indicators of creative thinking ability, namely Fluency, Flexibility, Originality and Elaboration. In contrast to subjects with creative abilities, subjects with less creative abilities can only solve questions by drawing two rectangular shapes whose area is the same as the area of a square, namely and can determine the formula for finding the area of a rectangle and parallelogram, subjects with less creative abilities can also understand and solve questions by good and clear of the two types of quadrilaterals. However, students with less creative abilities cannot expand an idea and detail an answer. So it can be concluded that subjects with less creative abilities can only fulfill the indicators of Fluency, Flexibility and Originality. This is in line with research results (Amelia & Pujiasti, 2020) that subjects can understand problems and also find solutions, prepare plans and implement those plans. But when they encounter obstacles in solving problems, they easily give up and even cancel their plans to solve the problem. The results of creative thinking from students with moderate abilities are less varied in solving problems, categories and some students' answers are the same as other students, the results they provide are less detailed and complete. $64cm^2$

Subjects with non-creative thinking abilities (SNA) can only understand questions from problems where subjects can write questions in mathematical form by describing a square, writing a square formula and finding the area of a square based on the instructions from the problem. However, subjects with non-creative abilities cannot develop questions in various rectangular shapes. Cannot understand and solve questions well and

clearly from various types of quadrilaterals and cannot expand an idea and detail an answer. So it can be concluded that subjects with non-effective abilities can only fulfill one Fluency indicator by describing the shape of the problem as a square and solving it well. This is in accordance with the statement (Farhan & Hakim, 2021) that creative abilities or creative attitudes are part of students' positive attitudes which must continue to be instilled so that the ultimate goal is to make students' learning achievements even better. A positive attitude that is embedded into the character of students will certainly make their learning achievements much better. Overall, the ability to think creatively is closely related to the problem solving process. Thus, various ways of creative thinking activities through problem solving activities must continue to be maintained in order to achieve process standards and outcome standards in mathematics learning. To be able to achieve maximum process standards and result standards in each series of mathematics learning, teachers must be able to carry out various learning activities that can specifically stimulate students in terms of mathematical problem solving abilities (Putri, Iswara, & Hakim 2021).

CONCLUSION

The results of the research show that subjects with the ability to think creatively can easily solve problems well without any difficulty at all so that subjects with creative abilities can fulfill the four indicators of creative thinking ability easily, namely Fluency, Flexibility, Originality and Details (Elaboration). Subjects with less creative abilities cannot expand an idea and detail an answer. So it is concluded that subjects with sufficient creative abilities can only fulfill the three indicators of creative thinking ability, namely Fluency, Flexibility and Originality. Subjects with non-creative abilities can only describe the shape of questions in finding the area of a square, while subjects cannot develop questions in various rectangular shapes. Cannot understand and solve questions well and clearly from various types of quadrilaterals

and cannot expand an idea and detail an answer. So it can be concluded that subjects with non-effective abilities can only fulfill one Fluency indicator.

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