Hipotenusa
Journal of Research Mathematics Education *p-ISSN: 2621-0630*
VOL.5 NO.I 2022 *e-ISSN: 2723-486X*

Analysis of Students' Creative Thinking in Solving Problems Opportunities based on Students' Learning

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Abstract

The purpose of this research is research in creative thinking on student learning with opportunity material. The research method used is a qualitative research method, tajing the subject of class VIII junior high school students in 2021/2022. Based on the results of the discussion on creative thinking skills, students are given to obtain information on creative thinking skills on the opportunity material that has been taught.

Keywords: *Analysis, creative thinking, student learning methods.*

Abstrak

Tujuan penelitian ini adalah penelitian berpikir kreatif pada pembelajaran siswa dengan materi peluang. Metode penelitian yang digunakan adalah metode penelitian kualitatif, subjek tajing siswa kelas VIII SMP tahun 2021/2022. Berdasarkan hasil pembahasan keterampilan berpikir kreatif, siswa diberikan untuk memperoleh informasi keterampilan berpikir kreatif pada materi kesempatan yang telah diajarkan.

Kata kunci : *Analisis, Berpikir Kreatif, Metode Pembelajaran Siswa*

1. INTRODUCTION

Education is important for the development of the country. Education is the only asset to develop qualified talents. According to law no. year on the The national education system declares that

education is a fundamental and planned effort to create a learning atmosphere and learning process so that students actively develop their potential so that they have strength. religious spirit, self-mastery, personality, intelligence, noble qualities and necessary skills. they do it themselves. society, nation and state [1].

Mathematics is a science that underlies the development of modern technology and plays an important role in the sciences. Subjects taught to all students, from elementary school to university, are essential. Through the study of mathematics, students need to be logical, analytical, systematic, critical and creative, and to be able to collaborate effectively [1].

The ability to think creatively mathematically has become one of the important learning axes that need to be developed in learning mathematics. In learning math, students often have difficulty solving complex math problems or problems that don't follow the rules. Therefore, creative thinking in math is necessary to solve complex problems. By developing mathematical creative thinking skills, students will be able to solve math problems in a variety of ways. In addition, students can also apply to solve complex real-world problems with a variety of alternative methods [2].

The ability to think creatively is often overlooked in learning math. Generally people assume that creative thinking and mathematics have nothing to do with each other. Creative thinking skills are the most important skills for people in solving mathematical problems. Mathematics teachers also usually think that only logic is essential in mathematics, and that creative thinking is not very important in learning mathematics. Whereas a mathematician in developing a product or producing something new cannot be separated from the potential for creative thinking.

Various studies have shown that students have difficulty in learning math and have low math scores, such as mathematical creative thinking skills. There are many influencing factors such as

student learning style, math anxiety, lack of confidence, teacher confidence, environment, parental lack of interest and gende [2].

Learning outcomes are those used to show the level of success achieved by a person after making certain efforts. In this case the student results achieved by students in certain fields of study after participating in teaching and learning. Based on the description of certain concepts learned above, it is understood the meaning of learning outcomes, that changes be on students, both involving cognitive, effective and psychomotor as a result of activities .

By uraiana above investigators aimed at thinking creatively about ways student learning with opportunity material. This research is expected to provide an overview of the ability to think creatively on the different ways of learning of students.

2. RESEARCH METHODS

This study uses qualitative research methods, taking the subject of class VIII junior high school students in 2021/2022. The research method used is the test and interview methods. This creative thinking ability test was made by researchers with lecturer validation. From the results of the creative thinking ability test, the researcher analyzed the test results and conducted interviews with students to obtain valid data, by comparing the results of the written test and student interviews [1].

In grouping research subjects into groups of visual, auditory, or kinesthetic learning methods, a validated learning method scale is used. The scale is used to identify students according to their respective ways of learning, then a representative from each group is selected using a purposive side-by-side technique [3].

Data is said to be valid if the information obtained at the time of the interview regarding the tests that have been done, the subject can answer according to the information according to the complete

information. If the information obtained by the researcher does not feel valid, then triangulation is carried out to check the validity data, namely conducting interviews again with sources so that truly valid information is obtained [1].

3. RESULTS AND DISCUSSION

Based on the manual of creative thinking on 4 indicators, namely fluency, flexibility, originality, and detail. Based on the results of researchers' observations related to the creative thinking of secondary school students, the results are both very good and quite.The components in creative thinking that are in the very good criteria are fluent skills, flexibility while the components included in the good criteria are original skills and details [4].

Based on the results of the distribution of questions on the mathematical creative thinking ability test taken offline, the data is obtained in the form of student scores on students' mathematical creative thinking skills by doing the following tasks question in the form of a document probability test question description

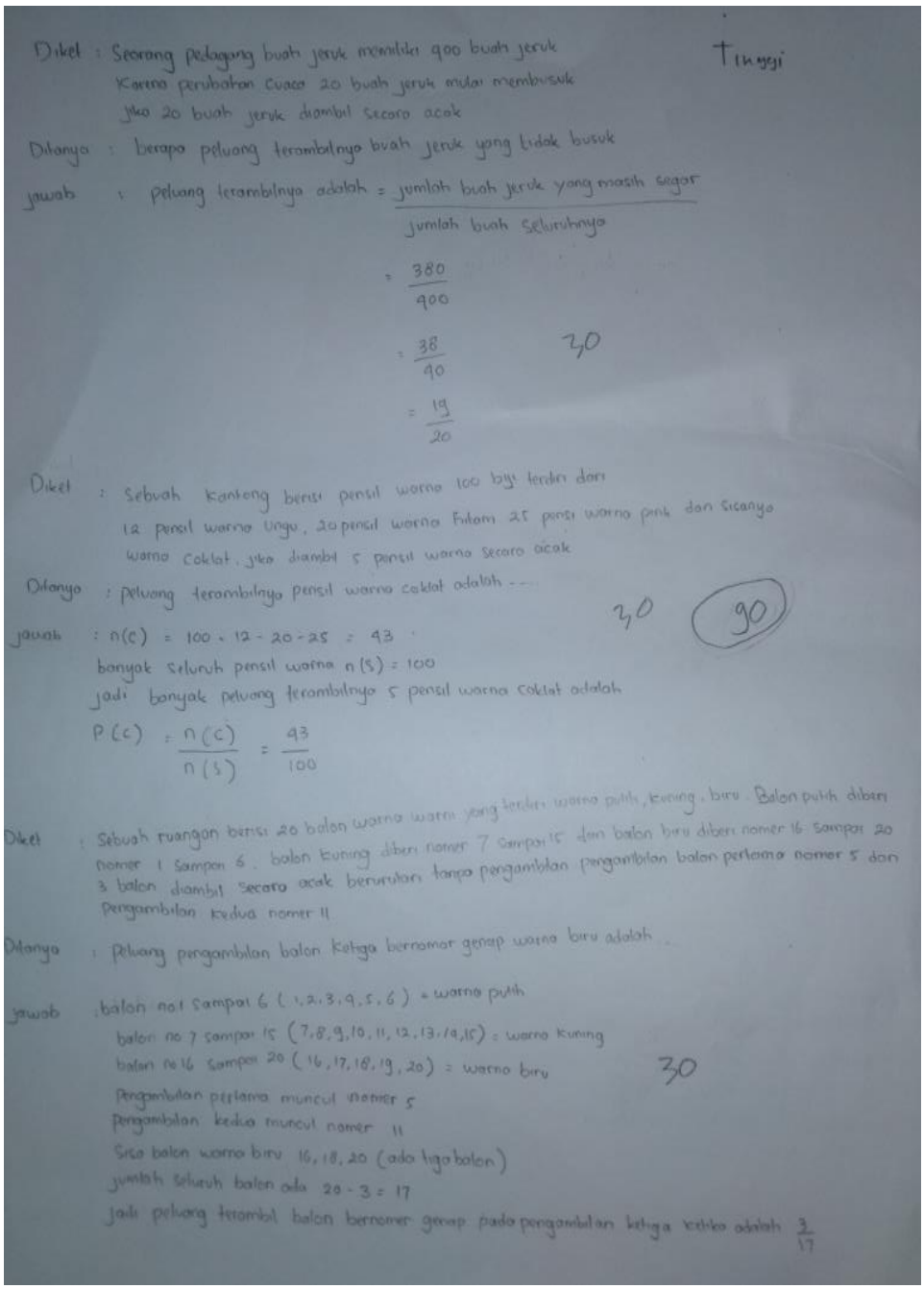

Figure 1. Answers of high-ability students

Q : Have you read the questions more than once?

S1 : Yes, in order to understand more

Q : Explain one of the questions from the question!

S1 : The total number of oranges is 400, there is a change in the weather, 20 oranges start to rot, and 20 oranges pick them at

random. The number of fresh fruits is 380. The fresh oranges are divided by the total number of citrus fruits.

Q : Did you check the answers to make sure they were correct?

S1 : Yes, that's right, ma'am, I've checked more than 1 time.

Q : Do you know what question you are working on?

S1 : You know, ma'am, this is a question of probability

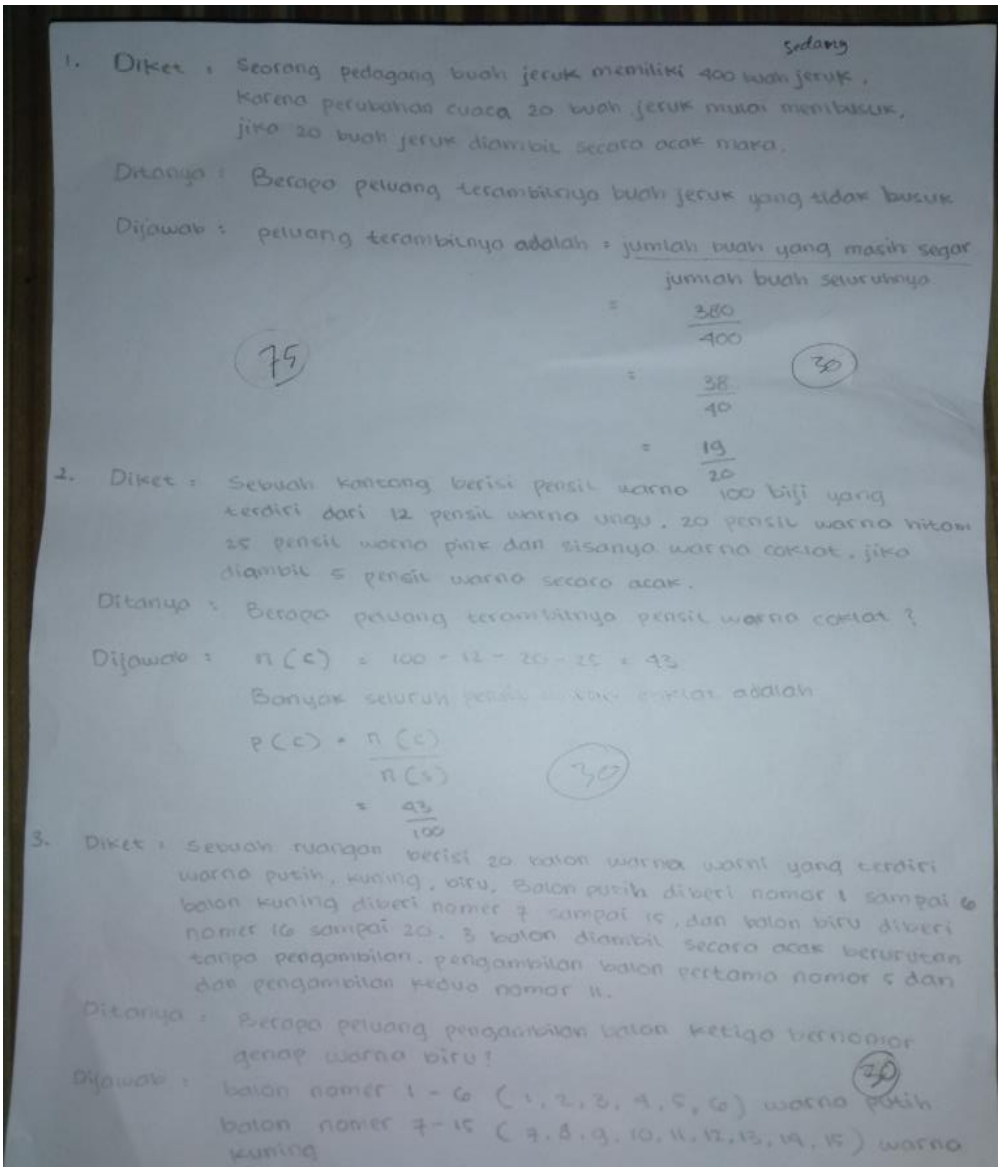

Figure 2. Answers of moderately capable students

Q : From question no 1 what was asked?

S2 : What is the probability of picking oranges that are not rotten, ma'am.

Q : Are there any difficulties in number 2?

S2 : No ma'am, I understand what is being asked. Only the probability of drawing a brown pencil.

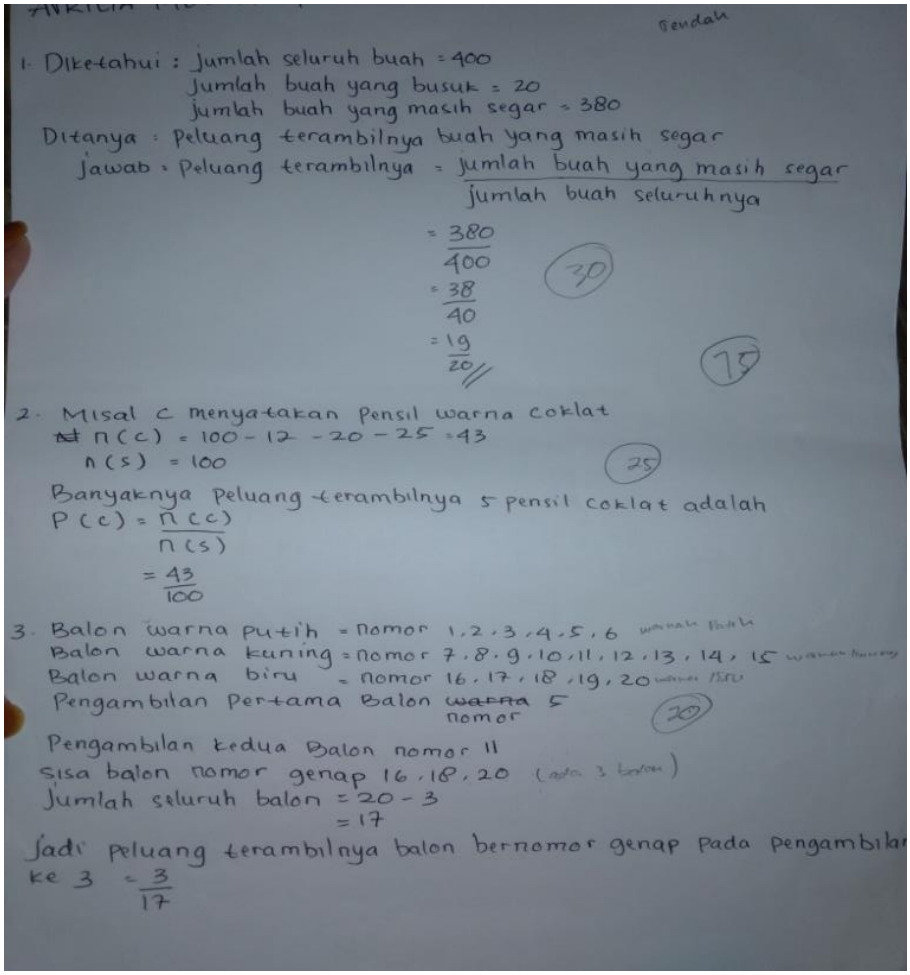

Figure 3. Low ability students' answers

Q : Have you understood question number 3 well?

S3 : I don't understand.

Q : Can you explain the steps to solve it?

S3 : I wrote what I knew in the question, namely the white balloons numbered 1,2,3,4,5,6, the yellow balloons numbered 7,8,9,10,11,12,13,14,15 , and the blue balloons have numbers

16,17,18,19,20. So that the first take is number 5, and the second is number 11. Furthermore, the remaining even number balloons are 16,18,20, the total number of balloons is 20 – 3 = 17.

Creative thinking ability tests are given to students to obtain information on creative thinking skills on the opportunity material that has been taught. . From class VIII SMP students obtained 3 subjects with high, medium, and low abilities. From tests and interviews, student responses and creative thinking skills were obtained in 3 categories, namely high, medium, and low [5].

Based on the results of research by [6]. The highest level of creative thinking lies in the novelty aspect, the flexibility and the worst aspect is flexibility. Novelty or novelty is given the highest position because it is the main feature to evaluate the product of creative thinking. Flexibility is placed in the next important place as it refers to the generation of multiple ideas that are used to complete a task. Fluency is determined when students come up with different ideas fluently in response to the questions in the task [7]. Argues that to determine a person's level of creativity, it is necessary to assess the ability to think creatively. Below is an assessment and expected student behavior.

Middle school teachers use teaching materials in the form of package worksheets from schools or existing textbooks for learning opportunity materials. Teachers do not yet have teaching materials that specifically discuss management up to 6M actions (reducing, reusing, replacing, separating, recycling, and composting) and life-level ethics. The dependence of teachers on certain textbooks without trying to find other sources of learning is one of the obstacles in efforts to develop students' creative thinking skills [2].

Table 1 about Indicator Creative thinking

Indicators	Behavior
1. Current Thinking *(F*luency)	a. Generate many relevant answer ideas b. Smooth flow of thought
2. Thinking Flexibility *(flexibility)*	a. Generating diverse ideas b. Able to change method or approach c. Directions different mindset
3. Think Original *(Originality)*	a. Giving unusual answers b. Give answers that are different from the others c. Give answers that are rarely given by most people
4. Thinking in detail *(elaboration)*	a. Develop, add, enrich an idea b. Breaking down the details c. Expand an idea

Based on the indicators above, the results Table 2 show that the ability to think creatively is in the high, medium, low categories.

Table 2 Show That Ability to Think Creatively

NO	NAME	CATEGORY	VALUE
1.	Rizza	High	90
2.	Milla	Medium	75
3.	Reno	Low	50

Based on the research results of each subject in the creative thinking process of students in solving different problems, this is in accordance with [8]. That students in involving the synthesis of ideas, building new ideas, and determining their effectiveness show the following characteristics: different characteristics for each category. In line with research [9]. Which states that the category of answers to creative thinking abilities for the rest of each aspect varies. Because students have to make questions with the results of the solutions

providing many ways and answers, this is in accordance with [6]. Mathematical creative thinking skills have 3 components: fluency, flexibility, and originality [10].

4. CONCLUSION

Based on research results using qualitative methods, it can be concluded that students' creative thinking ability has a great influence on improving student learning outcomes. It is evident from several characteristics and indicators in students' creative thinking abilities.

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