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Abstract: This qualitative descriptive research aims to analyze the ability to think creatively mathematically in problem-solving in terms of the adversity quotient. The research was conducted on 10 students of the Mathematics Education Study Program, Faculty of Education, Pawyatan Daha University. Collecting data using questionnaires, tests, interviews, and documentation. Questionnaire to determine the Adversity Quotient scale. A test to measure the ability to think creatively mathematically. Data analysis in the form of induction and reduction theory. The results of the questionnaire showed 3 students (30%) quitters, 6 students (60%) campers, and 1 student (10%) climber. The test showed that 4 students (40%) had high ability, 4 (40%) moderate, and 2 (20%) low. The results of the analysis show that students with the quitter type fulfill the three problem-solving indicators. students of the flexibility criteria with the camper type fulfill all indicators but lack detail, and originality criteria students with the climber type are able to fulfill all problem-solving indicators in detail.

Keyword: Mathematical creative thinking, Problem-solving, Adversity quotient

INTRODUCTION

The learning process in the 21st century aims to master students' critical thinking skills and be able to solve problems, be creative, innovative, and be able to communicate and collaborate (Ummah and Yuliati, 2020). The teaching and learning process is an effort to increase and develop creativity in educational instruction (Nahrowi et al., 2020). Mathematics as one of the subjects that plays a very important role in education. Learning mathematics is learning that places more emphasis on solving mathematical problems (Yanti and Syazali, 2016). The expected problem solving is problem solving that involves and trains creativity (Naja, 2018). Furthermore (Nahrowi et al,2020) sharpens that creative thinking skills can be analyzed when students are in the process of solving problems. The indication is when students are able to provide alternative answers and varied strategies, the uniqueness of the solutions offered and the details of the answers presented.

Polya (Nahrowi et al, 2020) defines problem solving as an effort to find solutions to difficulties, achieve goals through logical efforts. According to Lencher (Astuti and Setiawan, 2017), solving mathematical problems is the process of applying previously acquired mathematical knowledge to new, unfamiliar situations. This means that problem solving is the most complex level of individual cognitive activity that requires efforts to solve problems that involve all parts of the individual's intellectuality, namely memory, perception, reasoning, conceptualization, language, emotions, motivation, self-confidence, and the ability to control situations (Ummah and Yuliati, 2020). Naja (2018) states that there are five standard mathematics learning processes that have been formulated by NCTM, namely: problem solving, reasoning, communicating, making connections, and presenting. Solving problems in mathematics according to Polya (Astuti and Setiawan, 2017) consists of four steps, namely: understanding the problem, making plans to solve the problem, carrying out problem solving, re-checking the answers obtained.

In solving mathematical problems it requires the ability to think creatively mathematically. Creative thinking can be defined as a student's ability to generate many

possible answers and ways to solve problems (Nazareth et al, 2019). One of the important thinking skills for students for a more meaningful learning experience and improving their thinking skills in solving everyday problems is creative thinking (Tohir and Abidin, 2018). In line with Febriyanti (2016) and Fauziah (2019), this study measures thinking ability using 3 criteria of creativity, namely fluency, flexibility, and originality. Fluency refers to students' ability to produce diverse and correct answers. of the problems given Flexibility refers to the ability of students to propose a variety of ways to solve problems Originality refers to the ability of students to answer problems with different and correct answers or one answer that students are not used to at their level of development.

Student responses to problem-solving questions varied. Some students feel challenged and some others give up on the problems they face. A person's ability to turn a problem into a challenge that must be solved properly is called the Adversity Quotient (AQ) (Nahrowi et al, 2020). Adversity Quotient (AQ) introduced by Paul G. Stoltz (Yanti and Syazali, 2016), AQ is used to assess the extent to which a person faces complex and challenging problems and even turns them into opportunities. Stoltz (Ra'is et al, 2018) defines that AQ is a person's intelligence in responding to difficulties and the ability to survive, as well as a benchmark for someone in viewing a problem as an obstacle or persisting in facing problems until success is achieved on the problem. Nurlaeli (2018) argues that AQ is a person's ability to observe difficulties and process these difficulties with their intelligence so that it becomes a challenge to solve them. AQ is a form of intelligence other than IQ, SQ and EQ which is aimed at surviving in difficult situations. AQ is classified by Stoltz (Ra'is et al, 2018) into 3 categories, namely: low AQ (quitter), moderate AQ (camper), and high AQ (climber). In more detail Stoltz (in Putra et al, 2020) states, Quitters tend to deny the existence of existing challenges and problems; Campers have a limited ability to change, especially big changes. They accept change and even propose some good ideas but only as long as they are in their safety zone; Climbers are individuals who can be relied upon to make changes because the challenges offered make individuals grow because they dare to take risks, overcome fear.

The ability to think creatively mathematically becomes an important factor in problem-solving. Adversity quotient becomes a motivation in facing problem solving as a challenge. So that with the adversity quotient approach it is hoped that the problem can be solved by students well. On this basis, it is important to analyze the ability to think creatively mathematically in problem-solving in terms of the adversity quotient.

METHOD

This research is descriptive qualitative with the case study method, which is part of the qualitative method that wants to explore a particular case in more depth by involving the collection of various sources of information (Semiawan, 2010). The research was conducted on students of the Mathematics Education Study Program, Faculty of Education, Pawyatan Daha University.

Data collection was carried out by means of questionnaires, tests, interviews, and documentation. The questionnaire was used to determine the Adversity Quotient scale which was divided into 3 categories, namely: low AQ (quitter), moderate AQ (camper), and high AQ (climber). The test is given to measure students' mathematical creative thinking abilities. Student test results are grouped into three based on their level of ability. Two students were selected from each group to be interviewed. While documentation is intended to record all activities at each stage. Data analysis was carried out in a qualitative descriptive manner, in the form of induction and reduction theories.

RESULT AND DISCUSSION

Collecting research data at an early stage through an adversity quotient scale questionnaire and tests on students' mathematical creative thinking abilities. The results of the Adversity Quotient scale questionnaire from 10 students obtained the following data: 3 students (30%) quitters, 6 students (60%) campers, and 1 student (10%) climber.
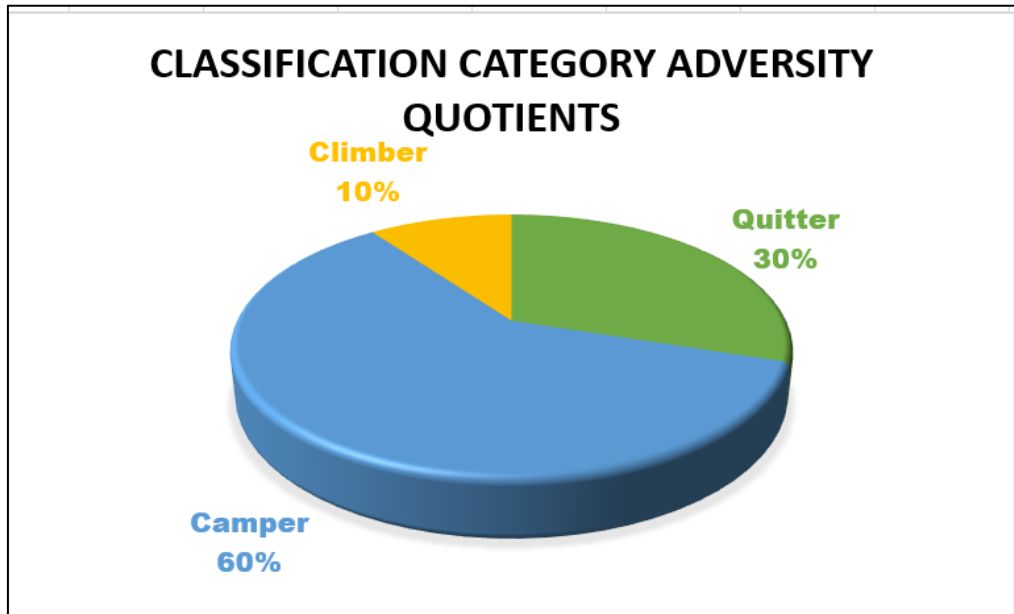

Figure 1. Classification of Adversity Quotients Categories

Based on the test results given, students are grouped into three based on their abilities, namely students with high, medium, and low abilities. From each group there were 4 students (40%) with high ability, 4 (40%) moderate, and 2 (20%) low.

Two students were selected from each group to be interviewed by paying attention to student answers based on 3 creativity criteria, namely fluency, flexibility, and originality. From students with high abilities namely AN (M-1) and SM (M-2). Students with moderate abilities, namely OM (M-3) and RM (M-4). While students with low abilities are PP (M-5) and DA (M-6).

Table 1. Subject Capability

Code	Subject	Scor	Group
M-1	AN	86	high ability
M-2	SM	80	high ability
M-3	OM	73	moderate
M-4	RM	70	moderate
M-5	PP	60	low
M-6	DA	50	low

The ability to think creatively mathematically in problem-solving in terms of the adversity quotient, is displayed by one selected subject from each group with the following identification.

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3.1 Fluency Criteria Subject with Quitter Type

The following is the result of the PP subject's answers, Fluency criteria with the quitter type.
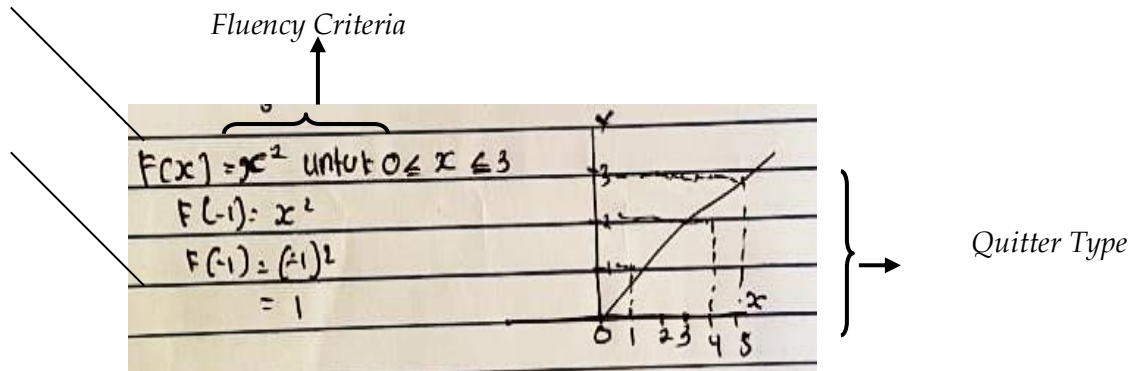

Figure 2. PP Subject Answer Sheet

The ability to think creatively mathematically Fluency criteria with the quitter type from PP subjects, indicate that in solving problem solving they are able to write coordinate points for a given function and are able to formulate problems, but have not been able to carry out concepts and are unable to verify problem-solving and final results Wrong. Following are the results of subject 1's interview at the problem-solving stage:

a. Problem Identifying Stage
The results of interviews with researchers and PP subjects showed that subjects could state what was known from questions with sorting concepts that took a long time, then subjects could mention the elements being asked.

b. Stage of Formulating the Problem
Based on the interview results, the subject can determine the solution according to the knowledge he has.

c. Stage of Implementing the Strategy
From the results of the interviews, the subject was able to work according to the formula at the problem formulation stage, but not according to mathematical concepts such as forgetting to describe the coordinates on the Cartesian diagram.

d. Problem Solving Verification Stage
Even though the subject can answer questions, they have not gone through the Problem-Solving verification stage.

3.2 Subject Criteria Flexibility with Camper Type

Following are the results of the OM subject's answers, Criteria for flexibility with the type of camper.
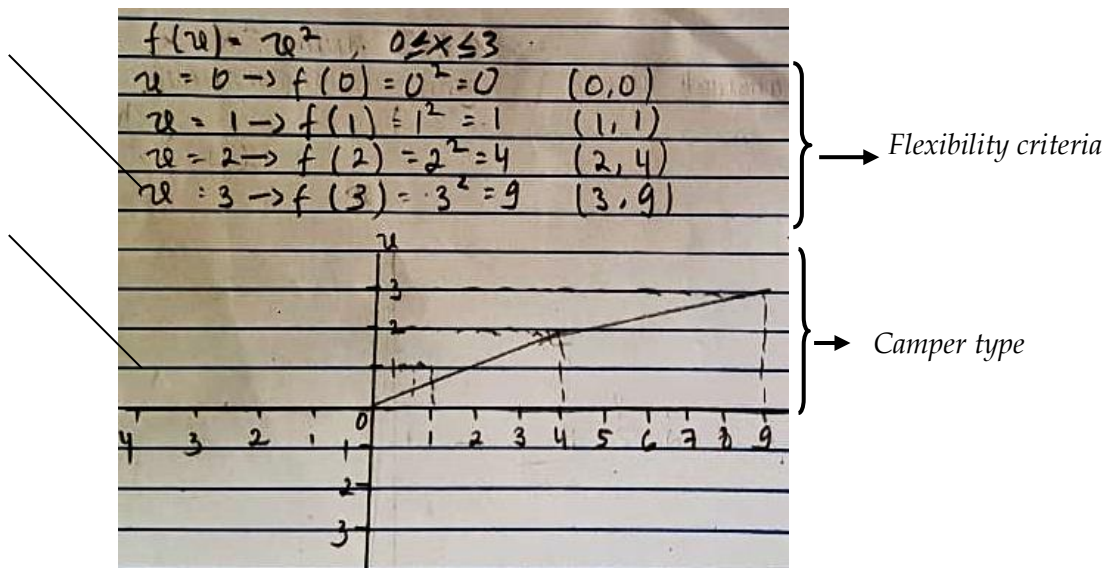
Figure 3. OM Subject Answer Sheet

The ability to think creatively Criteria for flexibility with the Camper type from the OM subject, shows that in solving problem solving it is able to describe concepts that are more flexible correctly and completely,

Able to implement strategies according to the concept, and verified. But the steps are not right so the final result in the picture is wrong. Following are the results of interviews with OM subjects at the problem solving stage:

a. Problem Identifying Stage

The results of the interviews show that the subject can mention the concept and can explain the questions asked correctly, then the subject can mention the elements that are asked correctly and precisely.

b. Stage of Formulating the Problem

The results of the interview, the subject can determine the concept solution and prove it with the knowledge they have.

c. Stage of Implementing the Strategy

Based on the interview results, the subject can work according to a more flexible concept.

d. Problem-Solving Verification Stage

The subject verified the problem-solving and was able to work according to the concept at the problem formulation stage, but the verification step was not detailed enough so that the final result was wrong.

3.3 Subject of Originality Criteria with Climber Type

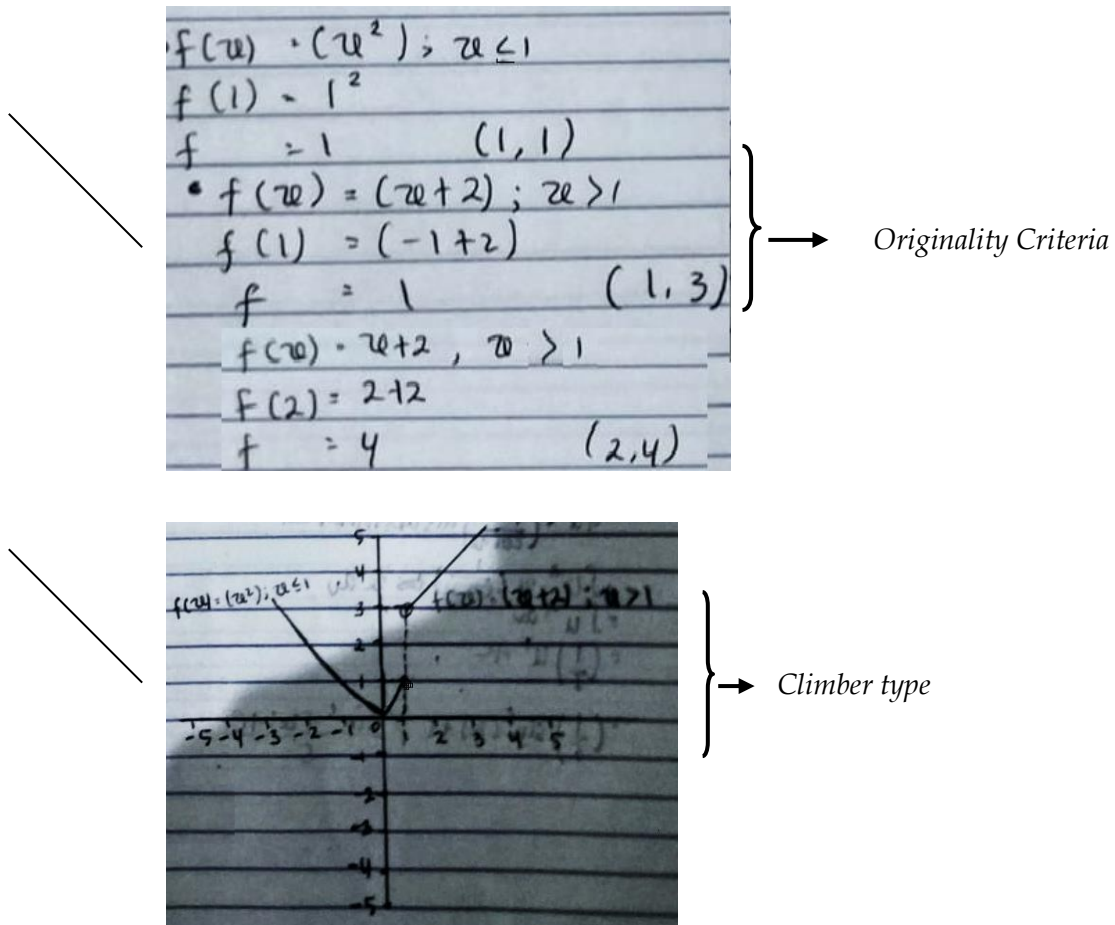The following is the result of subject AN's answer, the originality criterion with the climber type.

$f(x) \cdot (x^2) ; \; x \leq 1$

$f(1) = 1^2$

$f \quad = 1 \qquad (1,1)$

$\bullet \; f(x) = (x+2) ; \; x > 1$

$f(1) = (-1+2)$

$f \quad = 1 \qquad (1,3)$

$\longrightarrow$ *Originality Criteria*

$f(x) = x+2, \; x > 1$

$f(2) = 2+2$

$f \quad = 4 \qquad (2,4)$

$\longrightarrow$ *Climber type*

Figure 4. Answer Sheet for Subject AN

The originality criterion with the climber type of subject AN, shows that in solving problem-solving they are able to write new concepts (originality) correctly and precisely. as well as being able to verify problem-solving clearly and correctly and the final result is correct. Following are the results of interviews with subject AN at the problem-solving stage:

a. Problem Identifying Stage
From the results of the interviews, it shows that the subject can mention what is known from the questions and is correct, and can explain the questions asked correctly, then the subject can mention the elements being asked correctly and precisely.

b. Stage of Formulating the Problem
The results of the interview, the subject can determine new concepts and can prove with the knowledge they have.

c. Stage of Implementing the Strategy
From the results of the interviews, the subject was able to work on new concepts according to the problem formulation and trigonometry rules.

d. Problem-Solving Verification Stage

The subject performs problem-solving verification and can work according to the formula at the problem formulation stage, and carry out detailed verification steps so that the final result is correct.

CONCLUSION

Thus it was found that students of the Quitter Fluency Criteria fulfilled three problem solving indicators, namely understanding problems, formulating strategies, and implementing strategies. Student Camper-type flexibility criteria fulfill all problem-solving indicators, namely understanding problems, formulating strategies, and implementing strategies, but lack detail in verifying solutions so that the final results are still not quite right. Students with originality criteria with the climber type are able to fulfill all problem solving indicators, namely understanding problems, formulating strategies, implementing strategies, and verifying solutions in detail so that the final results are correct.

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