J. Pijar MIPA, Vol. 17 No.2, March 2022: 252-259 ISSN 1907-1744 (Print)
DOI: 10.29303/jpm.v17i2.3349 ISSN 2460-1500 (Online)

PROFILE OF STUDENT'S ALGEBRAIC THINKING IN SOLVING MATHEMATICS PROBLEMS REVIEWING FROM ADVERSITY QUOTIENT

Ratna Sukmaningrum and Ika Kurniasari*
Mathematics Education Study Program, Faculty of Mathematics and Natural Sciences,
Universitas Negeri Surabaya, Surabaya, Indonesia
*Email: ikakurniasari@unesa.ac.id

Received: January 20, 2021. Acceped: March 28, 2022. Published: March 30, 2022

Abstract: One way to solve problems in mathematics is to think algebraically. Algebraic thinking is thinking using generalization abilities, transformational abilities, and global meta-level abilities to solve problems. A person's ability to overcome and solve problems is called Adversity Quotient (AQ). There are three categories in Adversity Quotient (AQ): climber, camper, and a quitter. This study aimed to describe the profile of students' algebraic thinking in solving mathematical problems in terms of Adversity Quotient. This research is qualitative research with the subjects of this research are three grade IX junior high school students with different AQ categories. The instruments in this study were Adversity Response Profile (ARP) questionnaires, Problem Solving Tests (TPM), and interview guidelines. The qualitative data analysis technique follows the Miles and Huberman concept, which consists of three stages: data reduction stage, data presentation, and conclusion drawing. This study indicates that climber students perform all stages in solving problems and fulfill all indicators of algebraic thinking. Camper students did not carry out the re-examination stage in solving problems and only carried out generalization activities in algebraic thinking. Quitter students do not perform the steps in solving problems and do not fulfill all the indicators of algebraic thinking.

Keywords: *Algebraic Thinking, Mathematics Problems, Adversity Quotient*

INTRODUCTION

Mathematics is a science that underlies various sciences closely related to students' lives. Mathematics needs to be learned and mastered because mathematics is a tool to solve problems. Branches of mathematics include geometry, arithmetic, algebra, and analysis. In helping to solve problems, the important and must be mastered material is algebra [1-2].

In mathematics, algebra is one of the materials studied at the formal level of junior high school and taught in class VII. Students are trained to think abstractly and reason in solving mathematical problems using algebra. The importance of algebraic knowledge is to solve problems in mathematics in everyday life, so students are required to learn and understand algebra. The results of previous studies have explained that algebraic material is still complex for students to understand and master [3-4].

Mathematics is also closely related to thinking. A mental activity that involves brain work is called thinking [5-6]. Through thinking, humans can gain an understanding of something and find a way to solve problems with everything that happens in life. Three points of view have been put forward regarding the basic view of thinking, namely: (1) thinking is a cognitive activity that results from the thought that is estimated from behavior, (2) thinking is a process that involves knowledge of cognitive systems, (3) thinking is intended to produce solutions to solve problems [7].

Thinking is an activity carried out by humans that involves knowledge possessed to get a solution in solving a problem. Algebraic thinking involves mathematical reasoning by obtaining mathematical meanings related to symbols and operations in algebra [8]. To solve problems in mathematics by thinking algebraically, students must have generalization, transformational, and global meta-level abilities [8]. Generalization ability is forming expressions and equations that arise from the pattern of number sequences in algebraic abilities. Transformational abilities are algebraic abilities related to maintaining equality by changing forms or equations. Global meta-level ability is the ability to use algebra to solve algebraic problems and non-algebraic problems. From the statement above, it can be concluded that algebraic thinking is thinking with generalization, transformational, and global meta-level abilities in solving problems in mathematics [8].

A problem is something that must be resolved by someone [7]. Problems in mathematics are problems in mathematics that must be answered or solved. Problems are problems for students, so they must be solved. Students must try to solve the given problem. Problems are closely related to problem-solving. Problem-solving itself is defined as an attempt to find a way to solve the problem to achieve the desired goal [9].

There are four stages used in problem-solving: understanding the problem, devising a plan, carrying out the plan, and looking back [10]. In understanding the problem, students must understand the problem by identifying what is known and what is being asked in the question. The next step is devising a plan; students must develop a plan for solving a problem based on the previous step. The next step is carrying out the plan. Here students must solve the problem according to the plan in the previous stage. The last step is looking back; students must recheck the results obtained are following or not with those

asked in the problems given. In this study, sequential steps are needed to solve a problem, as stated by Polya. In solving problems, not only Polya's theory can be used, but in this study, using the stages as described by Polya because it makes it easier for students to solve problems sequentially.

The ability to face difficulties and solve a problem for each student is different [11]. The ability to solve problems well supports a person's ability to solve problems [12]. The ability possessed by a person to find a solution to a problem that must be resolved immediately is called the Adversity Quotient (AQ). In the course of students' thinking, the Adversity Quotient (AQ) plays an important role in students' thinking processes in solving a problem in mathematics. The adversity Quotient owned by students is distinguished based on different levels.

AQ is an indicator to see how strong a person is in a problem [13-16]. AQ is used to measure how someone faces a problem, whether they will come out as a winner, retreat in the middle of the journey when trying to face a problem, or choose not to get the slightest challenge from the problems they face. There are three types of AQ: (1) climbers are a group of people who have the effort and try to survive to face challenges and obstacles to reach the peak of success in solving the problems they face. (2) campers are a group of people who have the effort to face challenges. But must stop in the middle of the road so as not to reach the peak of success, (3) quitters are a group of people who do not have the desire to face a challenge in their life, so they easily give up and give up to reach the peak of success. With different levels of AQ, students also have differences in their way of thinking [17].

RESEARCH METHOD

This research is qualitative research. This study aims to describe the profile of students' algebraic thinking to solve problems in mathematics in terms of three types of AQ, namely climber, camper, and quitter types. The qualitative method is a method that provides an overview of a problem that occurs in the field both in writing and verbally from the subject being observed [18]. The subjects of this study were grade IX students in one of the public junior high schools in Tulungagung, which consisted of three students.

Table 1. Type AQ

Score	Category
59 and below	*Quitter* (QT)
60 – 94	Transition *quitter*s (QT) to *camper*s (CM)
95 – 134	*Camper*s (CM)
135 – 165	The transition *from camper*s (CM) to *climber*s (CB)
166 and above	*Climber* (CB)

The grouping of students in the three AQ categories uses an Adversity Response Profile (ARP) questionnaire, which students answer. The main instrument in this study was the researcher himself and his supporting instrument in an ARP questionnaire consisting of 30 questions adopted from Sudarman [19], problem-solving tests, and interview guidelines. Interviews were conducted after the subject finished working on solving mathematical problems by thinking algebraically to get deeper into unwritten information and knowing clearly about the results of solving the problems given. Subject selection by considering the ARP is scored according to the camper, climber, and quitter categories, as shown in table 1. Considers students who are easy to communicate. There are three kinds of data analysis: test analysis with ARP questionnaires, data analysis on algebraic thinking skills in solving mathematical problems, and interviews. Analysis of the ARP test data using scoring guidelines based on the type of AQ according to Stoltz with the following intervals [13].

Table 2. Algebraic Thinking Indicators

Types of Ability	Indicators	Code
Generalization	1. Students can generalize equations from	G1
	1. Students can determine the equivalent algebraic form	T1
Transformational	2. Students can perform operations on algebraic forms	T2
	3. Students are able to determine the solution of an equation in algebra	T3
	1. Students can use algebra to analyze changes, relationships and predict a problem in mathematics	L1
Global meta-level	2. Students can model problems and solve	L2
	3. Students can use algebra to solve problems in other disciplines	L3

Table 3. Problem Solving Indicators Problem Solving

Stage Polya Problem	Solving Ability Indicator	Code
understanding of the problem (understanding the problem)	Subjects can determine the information that is known on the problem.	U1
	Subjects can determine what is being asked in the question	U2
devising a plan (drawing a plan)	*devising a plan* (compiling a plan)	D1
carrying out the plan (implementing a completion plan)	Subjects can make mathematical models	C1
	Subjects can perform corrective steps and calculations in solving problems	C2
Looking back (checking back)	Students re-examine and conclude the results obtained from their work	LB 1

ARP test results data analysis of algebraic thinking ability test data in solving mathematical problems is carried out based on the indicators of algebraic thinking and problem-solving in the following table 2.

Qualitative data analysis techniques follow the Miles and Huberman concept, consisting of three stages: data reduction, data presentation, and conclusion drawing [20].

RESULTS AND DISCUSSION

Results and Data Analysis of Adversity Quotient Adversity

Response profile (ARP) questionnaires were given to 32 students in grades IX-A. In the ARP questionnaire, there were 30 events, each of which contained two statements. The questionnaire that 32 students had filled out was then scored according to the ARP scoring guidelines, as shown in table 1. There were 3 students in the climber category, 17 students in the camper category, and 2 students in the quitter category. From each category, one student was selected to be the research subject by considering suggestions from partner teachers and students who have good communication.

Here, the researcher presents the research subjects, namely students in the categories of climbers, campers, and quitters, along with the student codes in the following table:

Table 4. The results of the ARP scores of research subjects

Subject Codes	ARP scores	category
SCB	192	*Climber*
SCM	132	*Camper*
SQT	59	*Quitter*

Data and Analysis of Student Algebraic Thinking Category Climber in Solving Mathematical Problems

a. Analysis of algebraic thinking in subject Climber is in solving mathematical problems on generalization ability.

SCB subjects can generalize and represent the relationship problem between variables from a number pattern indicated by the G1 code. In solving mathematical problems, the SCB subject first wrote down what was shown in the U1 code and then wrote down the plan to be carried out indicated by the U2 code. SCB subjects carry out the written plan to solve the problem and can create a mathematical model indicated by the C1 code. After getting the answer, the SCB subject rechecked the results of his work. The results of interviews conducted by researchers on the subject of SCB are below to strengthen the rareness of SCB in solving problems in algebraic thinking (table 5).

Tabel 5. The results of SCB in solving problems in algebraic thinking

Researcher	: what steps did you take to solve the problem?
SCB	: I first wrote down what was known in the problem, then I made an example first, Ms. (U1). From the problem for the first picture, it is known that there are 2 balls and 3 boxes weighing 42 kg, and in the second picture, there are 4 boxes weighing 24 kg. Let's say the ball is x, and my box is y.
Researcher	: then what do you do with this example?
SCB	: After I took that as an example, Ma'am, then I made an equation. So for the first equation $2x + 3y = 42$ and the second equation $4y = 24$ (C1)
Researcher	: what next?

ISSN 1907-1744 (Cetak)
ISSN 2410-1500 (Online)

SCB	: the question that is being asked is the total weight of the ball and box, so I first find out how much 1 ball and 1 box weigh. (U2)
Researcher	: in what way do you look for it?
SCB	: I use substitution, ma'am. The squares can be directly searched from the 2nd equation so that we get $y = 6$. Then I substitute 6 into the first equation (C2). So that I get the weight of 1 ball and 1 box, then the last I add them up. (LB1)

b. Analysis of Climber subject's algebraic thinking in solving mathematical problems on transformational abilities

SCB subjects have met all transformational indicators. SCB subjects have algebraic abilities that have a lot to do with maintaining equality with equations or changing forms but are still equivalent or have the same meaning as indicated by the T1 code. In performing algebraic operations, the T2 code is shown, and the completion of an algebra can be fulfilled by the SCB subject indicated by the T3 code. It can be strengthened by the results of the interviews conducted. Based on the results of interviews conducted, SCB has met all indicators of transformational ability, namely being able to determine the equivalent algebraic form, perform fractional operations in algebraic form, and determine the solution of an algebraic equation. It is reinforced by the results of the researchers' interviews with SCB as follows (table 6).

Tabel 6. the results of the researchers' interviews with SCB

Researcher	: How do you solve this problem?
SCB	: I will make an example first
Researcher	: what kind of example?
SCB	: I will write down what is known first. What is known in the question is that the difference between the money of a brother and sister is 20 thousand (U1). Let my sister's money say x and my sister's money let's say y. Then, from the next sentence in the problem. I changed it into mathematical form, namely to (C1)
Researcher	: does that mean there are 2 equations? Then what do you do?
SCB	: I eliminated Mrs. from the 2 equations (C2).

c. Analysis of Climber subject's algebraic thinking in solving math problems at global meta-level abilities

SCB subjects have fulfilled all global meta-level indicators. SCB subjects have abilities that involve: algebra as a way to find a solution to the problem. In using algebra and analyzing the relationship of the problem with mathematics, it is indicated by the L1 code. The L2 code indicates it, and the use of algebra to solve the problem can be seen in the L3 code to simulate the problem and solve it. The student's answers show that students can solve problems by following the stages of solving problems in sequence. To strengthen the results of student work, researchers interviewed SCB as follows (table 7).

Table 7. The results of student work, researchers interviewed SCB

Researche	: How about this question?
SCB	: I first wrote down what was known in the problem (U1), then I made an example of making a mathematical model, Miss (C1).
Researche	: then?
SCB	: I did the elimination and substitution method, Ma'am, so that I found Sarah's current age is 33 years, and Sari's age is 19 years (LB1).

Data and Analysis of Student Algebraic Thinking in Camper Category in Solving Mathematical Problems.

a. Algebraic thinking analysis of Camper category subjects in solving math problems on generalization abilities.

SCM thinking is analyzed in solving mathematical problems. For indicators of generalization ability, SCM subjects meet these indicators. Overall, SCM subjects have carried out the process of forming expressions and equations that arise from a number pattern. In working on the SCM subject, they also write down what is known and ask about the problem to facilitate the steps in solving it. However, the SCM subject did not perform at the review stage or did not check. It can be strengthened by the results of interviews conducted by researchers on SCM (table 8).

Table 8. The results of interviews conducted by researchers on SCM

Researcher	: what about number 3?
SCM	: I assume a circle with a variable x and a box with a variable y (C1)
Researcher	: then, what is the mathematical model?
SCM	: from what is known in my problem, make a mathematical model $2x + 3y = 48$ dan $4y = 24$
Researcher	: then?
SCM	: I use substitution ma'am, then I get the values of x and y

ISSN 1907-1744 (Cetak)
ISSN 2410-1500 (Online)

Researcher	: that's all?
SCM	: after that, I added up the x and y, ma'am, because what you were asked about was the weight of the box and circle.

b. Analysis of algebraic thinking for Camper category subjects in solving mathematical problems on transformational abilities

SCM has not met the transformational indicators. In fulfilling the transformational ability, SCM has not met the indicators related to modifying the form or equation in maintaining equality. It can be seen that SCM cannot create a mathematical model that is equivalent to what is known in the problem. In solving the SCM problem, there is no rechecking stage so that from the beginning, making the model, there is an error, so the wrong final result is obtained. It can be strengthened by the results of interviews conducted by researchers on SCM (table 9).

Table 9. the results of interviews conducted by researchers on SCM

Researcher	: How do you do number 5?
SCM	: I made an example, Ma'am. I immediately made an equation from the known problem. But I'm also not so sure Mrs.
Researcher	: How do you make the mathematical model?
SCM	: Let me assume that my sister's money is x and my sister's money y.
Researcher	: After that, what?
SCM	: I subtracted ma'am, $50{,}000 - 20{,}000 = 30{,}000$. But I don't know if it's true or not.

c. Analysis of algebraic thinking for Camper category subjects in solving math problems at global meta-level abilities

SCM subjects have not been able to meet the global meta-level capability indicators. SCM subjects have not been able to model a problem in mathematics and solve it. SCM subjects cannot yet involve algebra to solve mathematical problems or beyond. In solving problems, SCM only meets some of the troubleshooting indicators. In solving mathematical problems, SCM did not recheck their work, so there were several errors in determining the mathematical model in the final answer. It is reinforced by the results of interviews conducted by researchers on SCM (table 10).

Table 10. The results of interviews conducted by researchers on SCM

Researche	: how do you solve question number 9?
SCM	: I can not model in mathematics ma'am. I'm confused
Researche	: That's what you do. How do you do it?
SCM	: Erm, I forgot, Miss

Data and Analysis of Student Algebraic Thinking in Quitter Category in Solving Mathematical Problems.

a. Algebraic thinking analysis of Quitter category subjects in solving math problems on generalization abilities

SQT subjects have not been able to meet generalization indicators in thinking algebraically. SQT subjects do not yet have the ability in the process of forming expressions and equations that appear in number patterns. SQT does not perform all stages of troubleshooting. In the SQT work, no information is written on the questions. In addition, SQT does not carry out the problem-solving stage until the end and has not been able to meet the indicators of algebraic thinking on generalization abilities. It is reinforced by interviews conducted by researchers on SQT subjects (table 11).

Table 11. The result of interviews conducted by researchers on SQT subjects

Researcher	: For number 3, how do you do it?
SQT	: I forgot ma'am. As I recall it, I immediately reduced it. So $42 - 24 = 18$

b. Quitter subject's analysis of algebraic thinking in solving math problems on transformational ability

SQT subjects have not been able to meet all transformational ability indicators. SQT subjects have not been able to determine the equivalent algebraic form. Based on the work of the SQT subject, it is known that the SQT subject has not carried out transformational activities to think algebraically in solving a problem. SQT subjects do not yet have the algebraic ability to change forms or equations to maintain equality. This is reinforced by the results of interviews with SQT subjects (table 12).

Table 12. The results of interviews with SQT subjects

Researcher	: how about number 5?
SQT	: Erm, I forgot
Researcher	: the mathematical model?
SQT	: brother's money – brother's money = 20,000
Researcher	: then?
SQT	: (silence)

ISSN 1907-1744 (Cetak)
ISSN 2410-1500 (Online)

Researcher	: You got 30,000. Where did you come from?
SQT	: In the question of 50,000, I subtract the difference between my brother and sister's money from 20,000, so I get 30,000 Ma'am.

c. Analysis of Quitter subject's algebraic thinking in solving mathematical problems at global meta-level abilities

SQT subjects have not been able to meet global meta-level ability indicators. SQT subjects have not been able to model a problem in mathematics and solve it. SQT subjects cannot yet involve algebra to solve mathematical problems. In addition, SQT did not perform any steps in solving the problem. It is reinforced by the results of interviews conducted (table 13).

Table 13. the results of interviews

Researcher	: what about number 9?
SQT	: I forgot, ma'am, how to do it.
Researcher	: try to read it again
SQT	: it's hard, ma'am. I'm being silly, Mrs. hehehe
Researcher	: Can you turn the problem into a story?
SQT	: I immediately assume that Sarah's age is 20 years and Sari's age is 10 years, Mom. It's the 2nd time
Researcher	form mathematical
SQT	: hehehe I don't know Ma'am

Based on the results and analysis that has been done, the following is a discussion of the profile of students' algebraic thinking in solving mathematical problems in terms of the adversity quotient. This study's stages of algebraic thinking refer to the theory developed, namely generalization ability, transformational ability, and global meta-level ability [2]. The following is a profile of students' algebraic thinking in the categories of climber, camper, and quitter.

Algebraic thinking profile of students in the Climber category in solving mathematical problems

To solve a mathematical problem, the subject of the climber can solve all questions with the correct answer by using algebra in its solution. The climber subject performs all stages in solving the problem. In carrying out the plan, the subject of the climber uses algebraic thinking, which is shown through the results of written tests and explanations through interviews. The climber subject explains clearly step by step to get the final result with the right answer. Therefore, in this case, the subject of the climber has used steps in solving problems and thinking algebraically in solving mathematical problems well.

Based on the analysis of the profile of students' algebraic thinking in solving mathematical problems explained in line with research conducted by Irianti, which explains that students in the climber category can solve mathematical problems coherently and sequentially at each stage [1]. If climber students experience doubts, they will not give up on solving problems and try to solve them to get the best results.

Students in the climber category can fulfill algebraic thinking with generalization abilities, transformational abilities, and global meta-levels in solving a given problem. When given a problem, the subject of the climber tries to answer and find a solution to solve the given problem according to his abilities. Reinforced by the theory put forward by Stoltz, the climber type is the type who tries to reach the peak of success, tries to face obstacles, and always raises himself to success [13].

Algebraic thinking profile of Camper Students in Solving Mathematical Problems

In solving problems, the camper subject does not perform the stage of looking back at the solution but performs the stage of solving the previous problem well. This is in line with research conducted by Irianti, who explained that camper students did not carry out the rechecking stage, resulting in inaccurate answers [21].

In solving a problem, the subject with the camper category only does algebraic thinking on generalization abilities. However, the camper subject did not meet the indicators of algebraic thinking on transformational abilities and global meta-level abilities. Students with the AQ camper category are easily satisfied with what they get. Stoltz's theory reinforces that someone in the camper category is easily satisfied with his work [13]. This satisfaction resulted in the camper subject not re-examining the results of his work so that in solving the problem, he failed with an incorrect answer. So it affects students' algebraic thinking in solving problems.

The profile of quitter students' algebraic thinking in solving mathematical problems

Quitter subjects cannot solve problems and do not perform the steps to solve the problems. It is in line with research conducted by Irianti, which explains that the quitter subject in solving the problem only does the stage of understanding the problem and planning well. Still, at a later stage, the quitter subject does not carry out the plan and does not check, resulting in getting the wrong answer [21]. Many quitter subjects are poorly understood and not very enthusiastic about solving them.

Students have difficulty and do not want to try to solve the given problem. Students in the quitter category do not carry out generalization, transformational, and global meta-level activities in solving their problems. Students with the quitter category easily give up just like that. They were reinforced by Stoltz's theory which states that someone with the AQ category of quitter level is a person who is not persistent in fighting and easily gives up on solving problems. It has an effect on students solving problems on the ability to think algebraically.

CONCLUSION

Based on the results of research and discussion, it is concluded that students in the climber category are able to solve problems in mathematics in an orderly manner and can fulfill all indicators in algebraic thinking. Students in the camper category did not carry out the rechecking stage in solving problems, so the answers were not correct, and camper students only met generalization indicators. Students with the quitter category do not meet the problem-solving indicators and do not meet all the indicators in algebraic thinking. In this study, there are differences in the categories of climber, camper, and quitter students in solving problems by thinking algebraically. Therefore, teachers should pay attention to students' algebraic concepts and train students in solving mathematical problems in various ways, one of which is algebra. Other researchers who will conduct research should conduct more in-depth interviews and find a place away from the crowd so that the results are more detailed and the interview atmosphere is calm.

REFERENCES

[1] Uno.HB (2007). Profesi Kependidikan. Bumi Aksara.
[2] Yusrina, S. L. (2019). Profil Berpikir Aljabar Siswa SMP dalam Memecahkan Masalah Matematika Kontekstual Ditinjau dari Kemampuan Matematika. *Jurnal Ilmiah Pendidikan Matematika Volume*, *8*(3).
[3] Qur'ani, Z. M. W. (2015). *Analisis Kemampuan Berpikir Aljabar Siswa Pada Materi Sistem Persamaan dan Pertidaksamaan Linier* (Doctoral dissertation, UIN Sunan Ampel Surabaya).
[4] Febriansyah, R., Yusmin, E., & Nursangaji, A. (2014). Analisis kesulitan siswa dalam memahami materi persamaan linear dua variabel di kelas x sma. *Jurnal Pendidikan dan Pembelajaran Khatulistiwa*, *3*(2).
[5] Sari, N. P. N., Fuad, Y., & Ekawati, R. (2020). Profil Berpikir Aljabar Siswa SMP Dalam Menyelesaikan Masalah Pola Bilangan. Kreano, Jurnal Matematika Kreatif-Inovatif, 11(1), 56-63.
[6] Saputro, G. B., & Mampouw, H. L. (2018). Profil Kemampuan Berpikir Aljabar Siswa Smp Pada Materi Persamaan Linear Satu Variabel Ditinjau Dari Perbedaan Gender. Numeracy, 5(1), 77-90.
[7] Sukmawati, A. (2015). Berpikir aljabar dalam menyelesaikan masalah matematika. Math Didactic: Jurnal Pendidikan Matematika, 1(2).
[8] Kieran, C. (2004). Algebraic thinking in the early grades: What is it. The mathematics educator, 8(1), 139-151.
[9] Purnomo, R. J., Widodo, S. A., & Setiana, D. S. (2020). Profil Berpikir Siswa dalam Memecahkan Masalah Matematis Berdasarkan Model Polya. RANGE: Jurnal Pendidikan Matematika, 1(2), 101-110.
[10] Polya, G. (2014). How to solve it: A new aspect of mathematical method (No. 246). Princeton university press.
[11] Masfingatin, T. (2013). Proses berpikir siswa sekolah menengah pertama dalam memecahkan masalah matematika ditinjau dari adversity quotient. JIPM (Jurnal Ilmiah Pendidikan Matematika), 2(1).
[12] Suhandoyo, G. (2016). Profil Kemampuan Berpikir Kreatif Siswa dalam Menyelesaikan Soal Higherorder Thinking ditinjau dari Adversity Quotient (AQ). MATHEdunesa, 5(3).
[13] Stoltz, PG (2000). Adversity Quotient: Mengubah Hambatan Menjadi Peluang. Gramedia Widiasarana Indonesia.
[14] Nuraini, N., Nursangaji, A., & Hamdani, H. (2018). Proses berpikir siswa dalam pemecahan masalah matematika pada materi perbandingan ditinjau dari adversity quotient. Jurnal Pendidikan dan Pembelajaran Khatulistiwa, 7(3).
[15] Fauziyah, I. N. L., Usodo, B., & Ekana Ch, H. (2013). Proses berpikir kreatif siswa kelas X dalam memecahkan masalah geometri berdasarkan tahapan wallas ditinjau dari adversity quotient (AQ) siswa. Jurnal Pendidikan Matematika SoLuSi (Tersohor Luas dan Berisi), 1(1).
[16] Hidayah, S. R., Trapsilasiwi, D., & Setiawani, S. (2016). Proses berpikir kritis siswa kelas vii f mts. Al-qodiri 1 Jember dalam pemecahan masalah matematika pokok bahasan segitiga dan segi empat ditinjau dari adversity quotient. Jurnal Edukasi, 3(3), 21-26.
[17] Komarudin, K., Monica, Y., Rinaldi, A., Rahmawati, N. D., & Mutia, M. (2021). Analisis Kemampuan Berpikir Kreatif Matematis: Dampak Model Open Ended dan Adversity Quotient (AQ). AKSIOMA: Jurnal Program Studi Pendidikan Matematika, 10(2), 550-562.
[18] Moleong, L. (2012). Metodologi Penelitian Kualitatif Edisi Revisi. PT. Remaja Rosdakarya.
[19] [Sudarman. (2011). Proses Berpikir Siswa SMP Berdasarkan Adversity Quotient (AQ) dalam Menyelesaikan Masalah Matematika.

ISSN 1907-1744 (Cetak)
ISSN 2410-1500 (Online)

[20] Sugiyono. (2011). Metode Penelitian Pendidikan (Pendekatan Kuantitatif, Kualitatif, dan R & D). Alfabeta.
[21] Irianti. (2017). Proses Pemecahan Masalah matematika Siswa berdasarkan Adversity Quontient. MATHEdunesa.