
STUDENT'S MATHEMATICAL UNDERSTANDING ABILITY ON SOLVING MATHEMATICAL PROBLEMS IN TERMS OF ADVERSITY QUOTIENT

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ABSTRACT

Education is one of the learning processes to improve a person's skills and behavior. Mathematical understanding is the ability to understand concepts, the ability to distinguish concepts, and the ability to calculate complex situations or problems. Adversity quotient is the response of a person or individual when faced with problems or difficulties in his life. The main problem in one of the schools in Sumedang is the students' thinking about mathematics lessons, where this lesson is less preferred than other lessons. The method used by this study is descriptive quantitative. This research was carried out in the even semester of 2021/2022, in one of the regional schools in Sumedang, class VII totaling 15 students. The data generated from this research is in the form of an instrument, which consists of indicators of students' mathematical understanding and there are 3 questions on indicators of mathematical understanding. The methods of data collection in this study are as follows: 1) test descriptions of questions or instruments to determine students' understanding abilities, 2) direct interviews with students. Research results from student answers according to students' understanding abilities in terms of AQ, as follows: 1) The results of student responses in terms of Adversity Quotient as many as 3 Climber type students (high) the average percentage of students' understanding ability is 80%, 2) The results of students responses in terms of Adversity Quotient as many as 9 Climber students (enough) the average percentage of students' understanding ability is 5,77%, 3) The results of students responses in terms of the Adversity Quotient as many as 3 students Cumper type (medium) the average percentage of students' understanding ability is 15,1%.

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INTRODUCTION

Education is one of the learning processes to improve a person's skills and behavior. Education can change the mindset of human resources in teaching and knowledge efforts by achieving life and self-quality. Formal education such as the implementation of education is inseparable from the educational goals to be achieved because it is a benchmark for the success of education implemented, the goals of national education are adjusted to the goals of

development and development of the Indonesian nation so that the educational goals are dynamic (Widodo, 2013).

The ability to mathematical understanding is one of the important goals in learning. The mathematics learning that is given and applied to students is open to rote memorization, but what must be given and instilled in students is the concept of the subject matter presented. Giving concepts is one way to strengthen the understanding of student material. If the student's concept of understanding is strong, then students will find it easier to solve the form of related problems. Following Hudoyo Sheridan, 2010: 1) namely "teaching is the transfer of knowledge to students so that it can be understood by students" Good education is education that can bring students to learning objectives, that is, students can understand the material delivered by the educator and can be fully understood by students.

So that the purpose of mathematical understanding is the ability to understand concepts, the ability to distinguish concepts, and the ability to calculate complex situations or problems. Thus Wiharno (2009) concluded that "the ability to understand mathematics is a basic thing that must be considered and needed functionally in the process and objectives of learning mathematics, and this can only be done through learning with understanding". Based on the mathematical understanding above, it can be concluded that understanding concepts is very important at the time of learning, besides that students must be able to understand all the intentions of the material presented by the teacher. And finally, the student's mathematical understanding must be achieved until the goals or materials that have been prepared can be conveyed properly and according to plan.

The main problem in one of the school in Sumedang is the students' thinking about mathematics lessons, where this lesson is less preferred than other lessons. Ayubi (2018: 356) says students who assume math is a difficult lesson. This can be seen from the beginning of learning students complain because they have the thought that they cannot, besides being affected by unfocusedness in learning such as not paying attention to learning and disturbing other students. When studying in the student class, it can be seen from the activeness and when doing the test questions given by the teacher, if the student responds and asks about the material that has been delivered by the teacher, then the problem above is not Some students pay the same attention or do not pay attention to the teacher when explaining the SPLDV material in front of the class. One of the things that can attract students when learning mathematics is using the Student Worksheet (LKS) that I use, namely, there are 3 spldv material story questions.

Adversity quotient is the response of a person or individual when faced with problems or difficulties in his life. In classroom learning, students can face several problems and difficulties such as lack of understanding of the material, inability to understand the material, and even a lack of response to the teacher when giving material in class. Meanwhile, students must be able to understand the material presented by the teacher to achieve learning objectives. Intelligence in the face of problems can be carried out with an increase in intelligence, which can be applied in mathematics lessons (Wena, 2009: 53). The method that can be used to solve problems using intelligence is known as the adversity quotient.

Adversity quotient is used to help the individual or someone in achieving dreams, facing everyday problems, and even strengthening abilities and intelligence in their field. The concept of IQ and EQ intelligence in students is not enough to be used as a capital of success. In this regard, Stolz developed a concept regarding adversity intelligence. According to him, this concept can be realized in three forms, namely: 1) as a new conceptual framework for understanding and improving aspects of success; 2) as a benchmark for the response to adversity, and 3) as a tool to correct one's response to misfortune. In other words, the

adversity quotient is an ability that functions as a tool that can survive in the face of all problems (Stoltz, 2000).

Adversity quotient as an ability consists of four dimensions abbreviated as CO2RE, namely the dimensions (1) control (control) where the individual can influence the response to himself in any situation; (2) origin-ownership is that the individual can bear the consequences and causes of the problems he faces (3) reach is that the individual does not respond or does not care about the problems he faces; and (4) endurance is one of an individual's ability to survive until he can face problems. These are the dimensions of the Adversity Quotient according to (Stoltz, 2000) that can increase and even decrease and can measure the ability of individuals from several dimensions according to the character of the individual. Based on the description above, the researcher wanted to analyze students' comprehension abilities on SPLDV material with Adversity Quotient type Climber, Cumper, and Quitter. Thus, the purpose of this study is to find out and study in depth about Adversity Quotient towards the achievement of students' mathematical comprehension abilities.

METHOD

The method used by this study is descriptive quantitative, the purpose of this research is to describe the data and conclude the results of the analysis that has been collected (Sugiyono, 2017). The purpose of this study is to describe the results of the study in detail regarding the level of student's comprehension ability in terms of advertising Quentin. To get student data according to students' understanding abilities, it will be processed or processed from the results or answers will be analyzed by percentage with the following formula:

Formula:

$$P = \frac{\text{frequency or number of respondents answer}}{\text{Number of respondents}} \times 100\%$$

This research was carried out in the even semester of 2021/2022, in one of the regional schools in Sumedang, class VII totaling 15 students. The data generated from this research is in the form of an instrument, which consists of indicators of students' mathematical understanding and there are 3 questions on indicators of mathematical understanding. The methods of data collection in this study are as follows: 1) test descriptions of questions or instruments to determine students' understanding abilities, 2) direct interviews with students.

RESULTS AND DISCUSSION

Results

The results of the study, which were analyzed from written answers and interviews, were known from 15 students conducted in clas VIII in one of the school in Sumedang with AQ students categorized based on the opinion of Stoltz (2000). On the mathematical comprehension ability of students with AQ type *Climber*, *Cumper* and *Quitter*. The AQ category based on the opinion of Stoltz (2000) is shown in the following.

a. Mathematical understanding ability

To measure students' mathematical understanding ability on algebraic matetial, there are results of the analysis of the percentage of students' answers or respondents.

Table 1. Percentage mathematical understanding ability

Description	Number of Student	Students scoer	Persentase
mathematical understanding ability	1	150	6,29%
	2	163	6,84%
	3	200	8,39%
	4	132	5,54%
	5	127	5,33%
	6	120	5,03%
	7	163	6,84%
	8	150	6,29%
	9	200	8,39%
	10	163	6,84%
	11	163	6,84%
	12	150	6,29%
	13	150	6,29%
	14	150	6,29%
	15	200	8,39%

Based on the result of the analysis of the table 1, the students' mathematical understanding ability is in accordance with the respondents or students' answers stating that students who get a score of 200 are 3 people (8,39%), students who get a score 163 are 4 people (6,84%), students who get a value of 150 are 5 people (6,29%), students who get a value of 132 are 1 person (5,54%), students who get a value of 127 as many as 1 person (5,33%), while students who get a score of 120 are 1 person (5,03).

Table 2. The results of analysis

Description	Category	Score	Number of students	Average value	Average percentage
mathematical understanding ability	Tall	166 – 200	3	200	8,39%
	Enough	135 – 165	9	155,7	5,77%
	Keep	95 – 134	3	126,3	5,1%
	Less	60 – 94	0	0	0
	Low	0 - 59	0	0	0

From the result of analysis of the table 2, there are students who have a score of 166 -200 as many as 3 people produce an average value of 200 (8,39%), students who have a score of 135 – 165 as many as 9 people produce an average score of 155,7 (5,77%), students who have a score of 60 – 134 as many as zero people produce an average score of zero, students who have a score of 0 – 59 are zero people results in an average value of zero.

b. Adversity Quotient

Table 3. Level Adversity Quotient

Adversity Quotient	Category	Score	Number of Students
Climber (High)	Tall	166 – 200	3
	Enough	135 – 165	9
Cumper (Medium)	Keep	95 – 134	3
Quitter (Low)	Less	60 – 94	0
	Low	0 – 59	0

Based on the results of the table 3, in the Adversity Quotient category, 3 types were obtained, namely Climber (high) with a score of 166-200 students with 3 students, type Climber (enough) with a score of 135-165 with several students 9 students, and finally the Cumper type (medium) with a score of 95-134 totaling 3 students. Thus, the AQ category can be described as follows

1. *Climber*-type mathematical comprehension ability (High)

Figure 1 displays three handwritten mathematical solutions for a system of linear equations in three variables (SPLDV). The solutions are numbered 1, 2, and 3, each showing the steps of elimination and substitution to find the values of x and y.

Solution 1 (Left): The student starts with three equations: $6x - 7y = 16$, $2x + 4y = -12$, and $6x - 7y = 16$. They eliminate x from the first two equations to get $18y = 52$, so $y = \frac{52}{18} = 2.72$. Then they substitute y back into the first equation to find $x = 5.85$.

Solution 2 (Middle): The student starts with three equations: $2x + 5y = 81000$, $6x + 2y = 15000$, and $2x + 5y = 82000$. They eliminate x from the first two equations to get $4y = 81000$, so $y = 20250$. Then they substitute y back into the first equation to find $x = 423$.

Solution 3 (Right): The student starts with three equations: $-3p - 8r = 35$, $4p + r = 11$, and $-3p - 8r = 35$. They eliminate p from the first two equations to get $11r = -56$, so $r = -5.09$. Then they substitute r back into the second equation to find $p = -1.16$.

Figure 1. *Climber*-type student answers (height)

Based on figure 1, the results of the SPLDV description test and interviews from the answers of *Climber*-type students, it can be explained as follows: Answer number (1) From the questions given, namely the SPLDV equation, the *Climber* Subject (height) can solve according to the concept of the equation and perform calculations meaningfully that produce the correct answer, namely the set of completions is the value of x produces 5.85 and the value of y produces 2.72. Answer no (2) From the process of understanding different story questions, the Subject *Climber* (height) can solve the problem and produce the correct answer, namely the set of completions is the price of a pencil (x) for 423 and the price of a book for (y) Rp. 6230. Answer no (3) From the process of understanding the problem, the Subject *Climber* (height) can face the problem or can solve all the

problems of question no. 3 that it produces the set of its completions, namely the value of p produces 1.6 and the value of r produces 3.77.

2. **Climber-type mathematical comprehension ability (enough)**

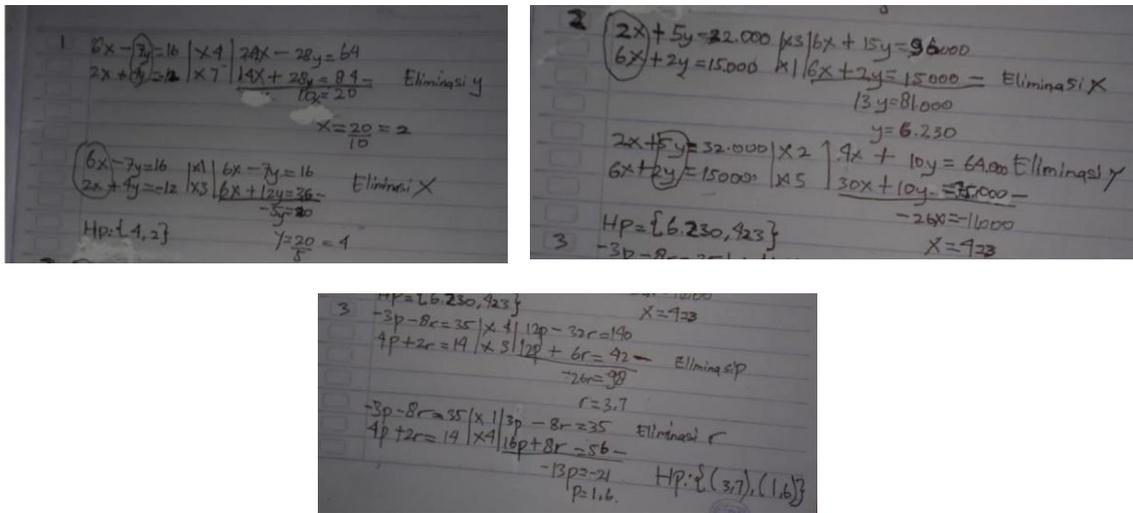


Figure 2. Climber-type student answers (enough)

Based on figure 2, the results of the SPLDV description test and interviews the answers of *Climber-type* students (enough) can be presented as follows: Answer number (1) From the given question, namely the SPLDV equation, the *Subject climber* (enough) can solve according to the concept of the equation and do the calculation meaningfully but the resulting answer is not right, that is, the set of completions is the value of x produces 2 and the value of y produces 4 which should produce the answer the truth is that the value of x returns 5.85 and the value of y gives 2.72. Jawban no (2) From the process of understanding different story questions, the *Subject Climber* (enough) can solve the problem and produce the correct answer, namely the set of completions is the price of a pencil (x) for 423 and the price of a book for (y) Rp. 6230. Answer no (3) From the process of solving the problem, the *Subject Climber* is (sufficiently) able to face the problem or can solve all the problems of question no. 3 that it produces the set of its completion i.e. the value of p produces 1.6 and the value of r produces 3.77.

3. **Camper type mathematical comprehension ability (medium)**

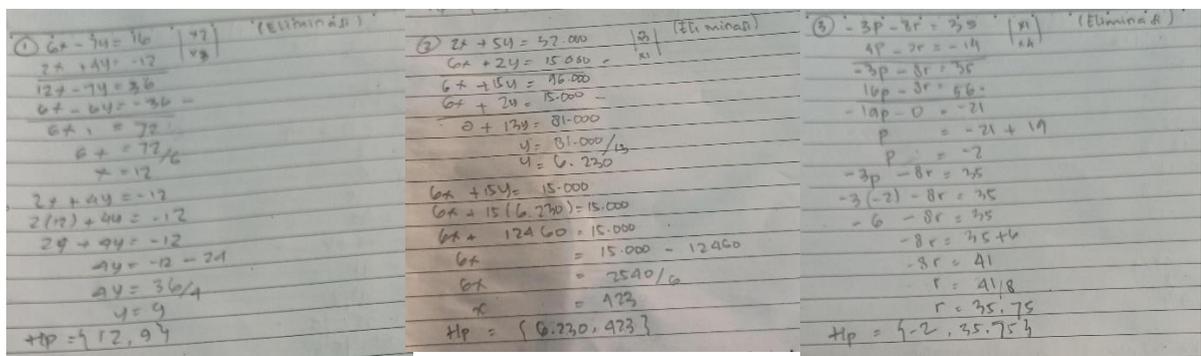


Figure 3. Camper type student answer (medium)

Based on figure 3, the results of the SPLDV description test and interviews the answers of *Cumper* type students (medium) can be presented as follows: Answer number (1) From the given question, namely the SPLDV equation, the *Subject Cumper* (medium) can solve according to the concept of the equation and do the calculation meaningfully but the resulting answer is not right, namely, the set of completions is the value of x produces 12 and the value of y produces 9 which should produce the answer the truth is that the value of x returns 5.85 and the value of y gives 2.72. Jawban no (2) From the process of understanding different story questions, Subject *Cumper* (medium) can solve the problem and produce the correct answer, namely the set of completions is the price of a pencil (x) for 423 and the price of a book for (y) Rp. 6230. Answer no (3) From the process of solving the problem, the *Subject Cumper* (medium) can face the problem or can solve all the problems of question no. 3 is not quite right that it produces the set of its completion i.e. the value of p produces -2 and the value of r produces 35.75, while the correct answer is to produce the set of its completion i.e. the value of p produces 1.6 and the value of r produces 3.77.

Discussion

This test of mathematical comprehension ability uses a learning implementation plan that has been designed before carrying out class actions. According to Kadek Winaya et al (2015) RPP is a plan of learning activities in one meeting, which is a development of the syllabus, with the aim being to achieve Basic Competencies (KD). Every educator in the education unit is obliged to compile a complete and systematic rpp according to its level so that learning takes place actively, inspiringly, fun, challenging, efficiently, and provides sufficient space for the initiative, creativity, and independence following the talents, interests, and development of students.

According to Sidik (2015), a bad rpp will produce learning output that is not optimal. Line with Bariyah et al (2014) explained that the success of the implementation of learning carried out by educators is determined by the design of education made. About the opinion of Hariyanto (2014) states that "the success of a learning activity is determined by success in making the learning plan". Based on the description above, it shows that the making of a Learning Implementation Plan (RPP) is very important, especially an educator must be able to deliver material until students' mathematical understanding is achieved by implementing learning that is more interesting, fun, increases creativity and responsiveness of students who are more curious and curious.

RPP in Mathematics learning is a measurement of the ability to understand concepts and reasoning mathematics learning, which needs to be accustomed to implementation in learning so that the learning process becomes more meaningful for students. In making rpp, students are also allowed to discuss in answer questions and statements of others with correct and clear argumentation (Pugalee, 2001). So that students will be more active in their learning.

See students' comprehension ability can be done by choosing the right learning approach to increase student activity during teaching and learning. There are so many approaches that experts offer, one of which is the contextual learning approach, with seven components, namely; constructivism, finding, asking, community learning, modeling, reflection, and actual assessment (MoNE, 2003). According to Sumarmo (2007: 689), indicators of mathematics learning ability include; (1) knowing, (2) understanding, and (3) applying mathematical concepts, procedures, principles, and ideas. It is also according to Santrock (2008: 351),

Concept understanding is a key aspect of learning, aimed at helping pupils understand the main concepts and find keywords in a subject, not just memorization. Participants' understanding of the concept can be improved if the teacher can deepen the topic by giving them the right and interesting example of a concept.

Adversity quotient (AQ) can be concluded as a person's desire to achieve success and ability so that he can rise and not be hindered in every effort. Adversity quotient reflects a high spirit of doing something to be aimed at. As Stoltz (Leonard & Amanah, 2014:58) says, the adversity quotient is the persistence of the individual in overcoming all existing problems, to go to the peak of success he wants. In line with what was revealed by Supardi (2013: 66) the adversity quotient is the ability of individuals to solve challenges, be able to conquer difficulties, solve problems that come their way, and even be able to become problems as opportunities in achieving the desired success so that individuals have good qualities.

Based on the description above, mathematical understanding must be exactly how to deliver the material following the concept so that students' understanding can grow and develop activities following the guidelines that have been planned. And the ability of students to be able to operate properly and systematically according to their concept with the learning objectives that have been planned.

CONCLUSION

From this research, it can be concluded that the student's mathematical understanding ability in solving problems related to the SPLDV material in terms of Adversity Quotient is on average good enough to measure mathematical understanding. That way some of the student's answers are according to students' mathematical abilities in terms of AQ, as follows: 1) The results of student responses in terms of Adversity Quotient as many as 3 *Climber type* students (high) the average percentage of students' understanding ability is 80%, 2) The results of students responses in terms of Adversity Quotient as many as 9 *Climber* students (enough) the average percentage of students' understanding ability is 5,77%, 3) The results of students responses in terms of the Adversity Quotient as many as 3 *Cumper type* (medium) the average percentage of students' understanding ability is 15,1%.

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