



Analysis Of Student Mathematics Problem Solving Ability Reviewed from Adversity Quotient (Aq) With Dynamic Assessment

Muhamad Nugroho , Kartono Kartono, Isnarto Isnarto

Universitas Negeri Semarang, Indonesia


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Abstract

This study aims to analyze problem solving skills in terms of Adversity Quotient (AQ) in solving problems of material relations functions. This research was conducted with qualitative research methods. The research subjects were taken by two students from each AQ category in class VIIIA. Data collection techniques using written methods and interviews. The validity of the data used the triangulation method, by comparing the written test data and interviews obtained at different times. The data analysis technique was carried out in 3 stages, namely: data reduction, data presentation, and drawing conclusions. The analytical framework was developed by the researcher based on the stages of problem solving according to Gagne Polya. The research subject selection technique is purposive sampling where the subject is selected based on the students' AQ. The analysis conducted in this study yielded the following results: (1) Students in the AQ quitter category have not been able to carry out problem-solving skills coherently and systematically, the subject can only do good solving skills at the stage of implementing the plan, (2) Students in the AQ camper category are able to carry out their abilities. problem solving well and systematically, although they have not carried out the re-examination stage and have not written down all the things that are known and asked in the problem, (3) AQ climber category students are able to carry out problem solving skills well and systematically from the initial stage to the final stage of problem-solving skills. mathematical problems, (4) Problem solving ability in terms of AQ, namely students in the quitter, camper, and climber categories who have implemented problem solving skills at each stage. Quitter students give up more easily in solving problems than camper and climber students so that the impact on problem solving skills obtained will be different.

 Correspondence:
Mlati Kidul Rt 06 Rw 01 Kecamatan Kota Kudus
E-mail: muhamadnugroho28@gmail.com

INTRODUCTION

Mathematics is an indispensable subject in the world of education. With mathematics, students are trained to think logically, systematically, and critically. In addition, mathematics trains students' thinking and reasoning abilities so that they are very useful in solving problems in everyday life. Bloom quoted in Hartanto & Mariani (2019) states that education is a process to change students. That is, there is a process in education that students must go through, one of which is mathematics education. Therefore, mathematics lessons play a very important role in developing students' mindsets.

Dinni (2018) mathematics is needed by students in completing daily life, a person can be said to be able to solve a problem if he is able to examine a problem and is able to use his knowledge in new situations. This is in line with Fajariah (2017) that students' mathematical problem-solving abilities are very important to develop. Therefore, among students' mathematical abilities that are very important to develop are mathematical problem-solving abilities.

Permatasari (2019) The results of data analysis show that 1) students' mathematical abilities are low, 2) the learning process is focused on the teacher, 3) students' involvement in the learning process is lacking, 4) the learning instructions used by the teacher do not facilitate students to improve problem solving abilities. mathematically, 5) students find it difficult to understand the language used in learning resources. This is in line with Sumartini (2016: 149) which states that to improve students' problem-solving abilities, it is necessary to be supported by the right learning model. Continuing from the results of Kariman's research (2019), it is found that one way to improve the quality of learning is to choose a strategy that is appropriate to the students' difficulties. A teacher must be able to use strategies or learning models that are suitable for the needs of students in learning. Therefore, it is necessary to develop a learning model that activates students in the teaching and learning process, which is to provide more opportunities for students to develop mathematical problem-solving skills.

One of the materials in mathematics that is used is relation and function material. In this

learning, students are required to be able to solve problems by using their problem-solving abilities. One of the materials that becomes a problem for class VIII students at SMP Negeri 2 Bae Kudus is relations and functions. Based on interviews with class VIII teachers of SMP Negeri 2 Bae Kudus, it was stated that many students had difficulties in solving questions related to relations and functions, especially in distinguishing which ones were relations or functions. This is reinforced by the data on the percentage of mastery of mathematics questions at SMP Negeri 2 Bae Kudus for the 2020/2021 academic year by looking at the results of student tests on relation and function material as well as the end of semester assessment. This shows that the mathematical problem-solving ability of students are low in solving problems related to relations and functions. In addition to appropriate learning models in improving students' problem-solving abilities, appropriate assessments are also needed to measure the extent to which students' skills are cognitive, affective, and psychomotor. According to Basuki (2017), assessment is a process of gathering information used to make decisions regarding education policy, quality of education, quality of teaching, or the extent to which students have acquired knowledge about teaching materials that have been taught to them. This is in line with Sunarti (2014) assessment (assessment) is part of the learning activities carried out to determine the achievement of students' competence in knowledge, skills, and attitudes. According to Hywood (2007) Dynamic Assessment (DA) can be defined as a subset of interactive assessments that include deliberate and planned mediation teaching and assessment of the effects of that teaching on subsequent performance.

The results of research from Mulhamah (2016) that in the initial study were still found among junior high school students who had the wrong mindset, were less critical, and lacked the ability to solve problems, one of the causes of these problems was because students preferred to solve problems with short way. This is in line with Wahyuningsih (2019) in his initial study, which stated that students who have not been able to understand the questions correctly so that students have not been able to write down the information that is known or asked. In

addition, students are also not able to describe the problem

into geometric shapes or sketch images that are in accordance with the problem, so that it will hinder the calculation process. The individual's ability to deal with this difficulty is called Adversity Quotient (AQ). According to Mustika (2018) at the time of learning, students' AQ plays an important role in mathematics learning activities, especially when students are required to exert problem-solving skills in dealing with difficulties and obstacles when learning mathematics. The same thing was also expressed by Hidayat (2019) AQ is a person's ability to face difficulties. Many people are resigned to facing problems because of the level of difficulty in problem solving.

METHOD

The design used in this study is a qualitative research design, the validity of the data using the triangulation method, by comparing the written test data and interviews obtained at different times. The data analysis technique was carried out in 3 stages, namely: data reduction, data presentation, and drawing conclusions. The analytical framework was developed by the researcher based on the stages of problem solving according to Gagne Polya. The research subject selection technique is purposive sampling where the subject is selected based on the students' AQ. In this study, one class will be selected, namely class VIII-A SMP N 2 Bae Kudus. The students in the class were categorized by AQ using the AQ questionnaire. From each category of AQ intelligence (quitter students, camper students and climber students) two students were selected as research subjects. The method in this study is to explore data, analyze and describe solving abilities Mathematical problems related to function in terms of AQ. Data collection techniques in this study consisted of observation, tests, questionnaires, interviews, and documentation. The test instrument is in the form of Problem-Solving Ability Test (TKPM). In this study, the results of students' answers were analyzed for their ability to solve mathematical problems at the polya stage. The questionnaire instrument was used to categorize students' AQ based on the Adversity Response Profile (ARP) of Stoltz

(2000) which was modified according to the daily context and characteristics of junior high school students. The data analysis techniques carried out in this study were: analysis of research instruments, analysis of TKPM trials and AQ questionnaires, analysis of initial data, and analysis of research results. Data analysis in this study was carried out before entering the field, while in the field and after finishing in the field by reducing data, presenting data, and drawing conclusions from the data that had been collected and verifying these conclusions.

RESULTS AND DISCUSSIONS

The research begins by selecting one class, namely class VIII-A which will be categorized as each AQ. Furthermore, the subject was given a test of mathematical problem-solving ability. In this study, the grouping of students who will analyze their problem-solving abilities is based on the results of the AQ questionnaire. There are three types of AQ, namely quitter (low AQ), camper (medium AQ), and climber (high AQ). AQ can be an indicator to see how strong a person continues to survive in a problem he is facing. AQ is the ability that exists in a person in facing a challenge or problem and looking for a solution to the problem. A person can solve or solve existing problems well if supported by good problem-solving skills. Ma'arif (2020) in his preliminary study resulted that when researchers gave practice questions to students, it was found that many students had difficulty solving the problem, this can be seen from the number of students who were unable to work on the questions given. According to Ismawati (2017) *Adversity Quotient* (AQ) is a person's intelligence in dealing with difficulties or problems, AQ helps increase students' self-potential. Yanti (2016: 69) *Adversity Quotient* (AQ) is the thought process of each student is different in solving math problems, their responses are different, some give up, try and some don't give up. In qualitative data analysis, it involves (1) data validity test, (2) data reduction, (3) data presentation, and (4) conclusions. From the analysis of the research results obtained the results of different problem-solving abilities from each AQ category. For the first, the AQ quitter category was taken by 2 students, namely S-08 and S-10. From the results of the study, it was found that S-08 and S-

10 subjects could only carry out plans on mathematical problem-solving abilities, S-08 and S-10 subjects had not been able to write down the other stages of problem-solving abilities clearly. This is in line with Hulaikah's research (2020) showing that students with low adversity intelligence (quitter) only describe the subject matter without further explanation. The subject is also less able to combine all the information to solve the problem. Subjects with low adversity intelligence did not check their answers. They were satisfied with their answers, without checking at all. The same thing in Wicaksono's research (2020) explains that quitter students are less able to plan problems well because they have not been able to simplify by conducting experiments and stimulation to plan solutions by assuming data. And on the research of Wahyuningsih (2019) explained that at the planning stage of problem solving, the Quitters subject did not write down the problem-solving plan clearly on the answer sheet and had not been able to write the plan in stages and clearly. Based on the description above, it can be concluded that AQ quitters have not been able to carry out mathematical problem-solving skills well, AQ quitters can only carry out plans on problem solving abilities even though they are not optimal.

For the second category, the AQ camper category was taken by 2 students, namely S-23 and S-24. From the results of the study, it was found that S-23 and S-24 subjects were able to carry out problem-solving skills well, namely at the stage of understanding problems, planning solutions, and implementing plans. However, the subject at the re-examination stage has not been able to carry out well, the subject has re-examined, but the subject has not been able to write a conclusion. Although the subject has implemented problem solving skills systematically, the subject only writes down some of the things that are known and asked about each problem. This is in line with Fauziah's research (2020) explaining that camper students choose a safe way when solving problems. They are satisfied with their achievements even though they have not yet reached the final stage. During the study, they were quite cooperative in learning. On the other hand, students who easily give up easily before solving problems. They lack confidence and become passive while studying. The same thing in Wicaksono's

research (2020) concluded that the problem-solving abilities of camper students were able to solve problems by understanding problems, planning problem solving, and implementing problem-solving plans correctly even though they were not written in full. However, camper students are less able to carry out the stages of re-examining their mathematical problem-solving abilities. Based on the description above, the AQ camper can carry out problem solving skills properly and systematically at the stage of understanding problems, planning solutions, and implementing plans. Although it has not carried out at the stage of re-examination and has not written down all the things that are known and asked in the problem.

For the third category, the AQ climber category was taken by 2 students, namely S-29 and S-30. From the results of the study, it was found that S-29 and S-30 subjects were able to carry out problem-solving skills well, namely at the stage of understanding the problem, planning solutions, implementing plans, and re-examining. All stages of problem-solving skills can be carried out properly.

Subjects S-29 and subjects S-30 have implemented problem solving skills systematically from the initial stage to the final stage. This is in line with Nalurita's research (2019) which states that students with the Climbers category can understand problems, plan problem solving, implement solutions, and re-examine the results of the settlement. Wahyuningsih's research (2019) concluded that students with the Climbers category in problem solving were able to write down information that was known and asked explicitly. At the planning stage of problem solving, climbers' students can write down supporting data to be used in problem solving, such as writing formulas to the final plan. In the process of implementing problem solving planning, climbers' students can carry out problem solving plans well. He had no trouble completing it according to what he had planned. At the re-checking stage, climbers' students re-checked independently and more thoroughly. Based on the description above, it can be concluded that the AQ climber category is able to carry out problem solving skills well and systematically from the initial stage to the final stage of mathematical problem-solving skills, namely

understanding problems, planning solutions, implementing plans, and re-examining.

CONCLUSION

The ability to solve mathematical problems based on the adversity quotient (AQ). The AQ quitter category has not been able to carry out problem solving skills coherently and systematically, the subject can only do well at the stage of implementing the plan. The AQ camper category can carry out problem-solving skills well and systematically, although it has not carried out at the re-examination stage and has not written down all the things that are known and asked in the problem. The AQ climber category can carry out problem solving skills well and systematically from the initial stage to the final stage of mathematical problem-solving abilities.

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