Mathematical Problem Solving Profiles Of Students Viewed From Adversity Quotient (Aq) In The Class X Sman 14 Bulukumba

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ABSTRACT

The research was descriptive research with qualitative approach which aimed to describe mathematical problem solving of profiles students viewed from Adversity Quotient (AQ). The instrument of the research was the researcher herself as the main instrument guided by AQ questionnaire, mathematical problem solving test, interview guideline, and field notes. The subjects of the research were the students of class X MIPA 1 and X MIPA 2 SMAN 14 Bulukumba who consisted of 2 climber students, 2 camper students, and 2 quitter students. The data were collected through task analysis and interview. The results of the research reveal that: 1) the profiles of climber students' mathematical problem solving are: a) at the stage of understanding the problems, climber students are able to interpret the problems by illustrating what they know in the form of pictures based on their understandings through writing, b) at the stage of devising a plan of problem solving, climber students are able to plan formulae which are used to answer the problems given, c) at the stage of carrying out the plan, climber students are able to do calculations through pre-planned formulae, d) at the stage of looking back the answers, climber students do not feel satisfied with the results they obtain before they recheck the answers by returning the obtained results into the known items of problems. 2) The profiles of camper students' mathematical problem solving are: a) at the stage of understanding the problem, camper students are able to interpret the problems by illustrating what they know in the form of pictures based on their understandings through writing, b) at the stage of devising a plan of problem solving, camper students are able to plan formulae which are used to answer the problems, c) at the stage of carrying out the plan, camper students are able to answer the problems through pre-planned formulae, d) at the stage of looking back the answers, camper students feel satisfied with the results they obtain without having to recheck the answers. 3) The profiles of quitter students' mathematical problem solving are.

Keywords: *Mathematical Problem Solving, Adversity Quotient*

INTRODUCTION

Mathematics has an important role in the development of science and technology that is developing at this time. Mathematics is used throughout the world as an important tool in various fields, including natural sciences, engineering, medicine / medical, and social sciences such as economics and psychology. Therefore, education and learning of mathematics are needed continuously so that it is able to preserve the sciences that have been obtained and make it possible to develop the knowledge.

Cockroft (1982) suggests that mathematics needs to be taught because (1) it is always used in all aspects of life; (2) all fields of study require appropriate

mathematical skills; (3) is a strong, concise and clear communication tool; (4) can be used to present information in various ways; (5) increase the ability to think logically, accuracy and spatial awareness; (6) providing satisfaction with efforts to solve challenging problems.

Now there is a change in the curriculum from the Education Unit Level Curriculum (SBC) to the 2013 curriculum where the learning process of mathematics is directed at learning to find mathematical concepts, learning from real problems in accordance with the principles of constructivism learning. In accordance with the Attachment to Permendikbud Number 54 of 2013 which states that the qualifications of the ability of graduates which include attitudes, knowledge, and skills of students must be met or achieved from an education unit at every level of primary and secondary education.

Basically the learning activities in the 2013 curriculum are a scientific approach (scientific approach), although in fact it is not new, because the scientific approach to CBC already exists, but the terms are different. The general characteristics are learning activities that prioritize process activities, namely: observing, asking, trying, and concluding. In accordance with the attachment to Permendikbud No. 65 of 2013 which states that, to encourage the ability of students to produce contextual work, both individually and in groups it is strongly recommended to use a learning approach that produces work based on problem solving.

In learning mathematics, aspects of problem solving are important aspects because mathematics is knowledge that is logical, systematic, patterned, abstract and equally important requires justification or proof. From what is revealed it is clear that in mathematics requires students to use basic abilities in problem solving such as logical, analytical, and strategic thinking. In addition, reciprocally by studying mathematics, students are honed in their ability to solve problems.

The importance of problem solving skills by students in mathematics is emphasized by Branca (Adiyoga, 2008) (1) The ability to solve problems is a general goal of teaching mathematics; (2) Problem solving which includes methods, procedures and strategies is the core and main process in the mathematics curriculum; (3) Problem solving is a basic ability in learning mathematics.

Some experts find several ways to solve mathematical problems, one of which is Polya. Polya found practical steps and arranged systematically in solving problems so as to facilitate students in solving mathematical problems. The steps in solving problems according to Polya this is intended so that students are more skilled in solving mathematical problems that are skilled in carrying out procedures in solving problems quickly and accurately as expressed by Polya namely understanding the problem (understanding the problem), devising a plan (making plans), carrying out the plan (carrying out the plan), and looking back (looking back at the results obtained) (1973: xvi).

The first phase is understanding the problem. Without an understanding of the problem given, students may not be able to solve the problem correctly. After students can understand the problem correctly, then they

must be able to draw up a problem solving plan. The ability to do this second phase is very dependent on students' experience in solving problems. If the problem solving plan has been made, whether in writing or not, then the problem is resolved according to the plan deemed most appropriate. And the last step of the problem solving process according to Polya (Suherman, 2003: 91) is to check what has been done starting from the first phase to the third phase of resolution. In this way the various errors that do not need to be corrected again so that students can arrive at the correct answer in accordance with the problem given.

One example of teacher participation is to ask back the answers that have been obtained by students in accordance with what is on his mind. Thus the teacher will know to what extent students' understanding of the material being taught, as well as the teacher can find out the mistakes made by these students in solving mathematical problems. In accordance with the National Council of Teachers of Mathematics (1906: 2) namely: "Effective mathematics teaching requires understanding what students know and need to learn and then challenging and supporting them to learn it well". The above quote is intended that teaching effective mathematics requires understanding how students know and want to learn and then challenge and support it to learn mathematics well.

Today's reality is seen based on observations made by researchers at SMAN 14 Bulukumba that in class X MIPA, the conditions of the development of students are quite complex starting from physical, psychological development, both of which grow from factors of self, family and social relationships that look good between each the other. Factors student problems may arise not because of purely within the students themselves, but maybe because of the effects of things that cannot be overcome by students in their families even parents themselves are not able to cope, as a result students become victims of this situation.

On average, most students in class X MIPA consist of students whose intelligence, creativity and skill are high enough so that sometimes with their abilities and potential they can create a wide range of opportunities and opportunities to achieve the future they dream of, but are different again when behind their great potential they experience a traumatic problem of family, economic and social friendships that are felt to be lacking in development for personally talented students, so that will make personal conditions become a potential individual but lazy, afraid of feeling inferior or even vice versa into individuals who do not care about surrounding environment. Whereas the initial development of high school students is vulnerable to the problems they face, that's why Adversity Quotient (AQ) is needed in analyzing the extent to which the ability of a class X MIPA student becomes stronger in facing difficulties in his life that is by having strong self-control, origin and recognition with regard to the problems they face, broad reach in dealing with problems, and the most important thing in this case is endurance, namely the extent to which the strength and endurance of students in dealing with the problems they face as children who have extraordinary advantages, both of their own , family and friendship social

relationships, so that they remain outstanding students who can achieve success by not easily giving up on what happened to them and being students who remain motivated to achieve achievement.

In addition there is a potential problem-solving ability in students which is shown by the interaction that shows the high level of student curiosity when attending mathematics lessons that are manifested in conducting question and answer activities between teachers and students. And this is also inseparable from the existence of students who gave up in the process of solving mathematical problems, even though they only need a few more steps to successfully solve the math problem. Another case with students who really have the determination to solve the problems given by the teacher in working on math problems, especially mathematical problem solving.

From the information obtained through interviews by subject teachers the researchers argue that the problem solving process does not always run smoothly. Not infrequently students find it difficult to solve mathematical problems. This is because the abilities possessed by each individual are different. When difficulties occur, it depends on the individual himself whether he will surrender or conquer the difficulties or continue to struggle to conquer the difficulties encountered. Some students find it difficult to solve mathematical problems, while other students find it easy. A student who has never succeeded in solving a math problem will find it difficult in the process of solving it, but on other occasions it no longer makes it a problem because he already has experience in the same or identical assignments. This matter supported by the opinion of Hudojo (1990: 3) which says that someone might be able to solve a problem with routine procedures, but other people in a non-routine way.

Adversity Quotient (AQ) is a person's ability to endure difficulties and be able to overcome life's challenges. Adversity is habit patterns that underlie the way an individual sees and responds to events in his life (expressed in the form of a score). AQ instruments are used to measure the ability of individuals facing difficulties and achieving success. Therefore, AQ becomes one of the important factors and is closely related to students in the learning process.

Briefly Stoltz (2000: 18) Adversity Quotient (AQ) consists of three types, namely (1) Climbers, a group of people who are always trying to reach the peak of success, ready to face the obstacles that exist, and always raise themselves to success, (2) Campers, a group of people there is still a desire to respond to existing challenges, but do not achieve success and are easily satisfied with what has been achieved, and (3) Quitters, is a group of people who prefer to avoid and reject the opportunities that exist, easily discouraged, easy to give up , tend to be passive, and not eager to reach the peak of success. For example in dealing with math problems that are not normally done, quitter students tend to avoid not wanting to try them because they feel they will not be able to solve them. Camper students will tend to try to do it but when it looks complicated then he will leave it, while climber students will try hard to solve the problem.

If the teacher teaches students the problem solving of mathematics without regard to Adversity Quotient (AQ), it can lead to errors in mathematics learning

strategies that have an impact on students' inability to solve problems. It is also important to note that students really use their knowledge to solve problems without hesitation or fear of mistakes..

The relavan study conducted by Rahmawati, et al. (2015) with the research title "Profile of Junior High School Students in Problem Solving Relating to Mathematical Literacy in Terms of Adversity Quotient (AQ)". Where this research only focuses on solving problems related to mathematical literacy that meet all aspects of the aspects of reasoning, argumentation, communication, modeling, connection, and representation.

Based on the description above, the writer is interested in conducting a study with the title "Profile of Mathematical Problem Solving Students in terms of Adversity Quotient (AQ) in Class X SMAN 14 Bulukumba", studying this profile is important because the profile generated will give a picture of students' thinking character in solving mathematical problems in each group Adversity Quotient (AQ) type of climber, camper, and quitter so that the teacher can design learning strategies that describe the mathematical problem solving of students who use Adversity Quotient (AQ).

Tabel 2.2 Indicator of Troubleshooting Phase Polya

Polya Phase	Indicator
Understand the Problem	1. write down what is known and asked 2. Explain the problem with the sentence itself
Plan solving Problem	1. Simplify the problem by conducting experiments and simulations 2. Make an example of data that is known to form in accordance with the problem. 3. Determine the appropriate formula to solve the problem
Doing plan	1. Substitute the data correctly into a predetermined formula. 2. Carry out settlement in a coherent and correct manner
Check back	1. Write down how to re-examine results and processes 2. Summing up the results of the settlement

RESEARCH METHOD

This research is a qualitative descriptive study. The subjects in this study were selected from students of class X MIPA 1 and X MIPA 2 SMAN 14 Bulukumba Bulukumpa District Bulukumba Regency in the academic year 2018/2019. The research subjects consisted of six students with two students each in the Climber (High) type, two students in the Camper (Medium) type and two students in the Quitter (Low) type. The determination of the subject is also based on the Math Problem Solving Ability Test and the results of interviews with the teacher.

The instrument used in the study consisted of two, namely: 1)The main instrument is the researcher himself; 2) Supporting instruments consist of: a) AQ type classification instrument to classify students into Climber, Camper and Quitter types; b) Mathematical Problem Solving Test (TPMM); c) Interview Guidelines, to qualitatively reveal students' mathematical problem solving abilities and test the credibility of data (trust in data), the researcher triangulates the source. In this study the analysis was carried out as a whole with the following steps: data reduction, data presentation stage and drawing conclusions; and d) Field notes, in the form of recording and recording.

RESULT AND DISCUSSION

From the results of the Adversity Quotient (AQ) questionnaire and scoring mathematical problem solving confirmed to the mathematics teacher and assigning subjects to each group based on communication and highest mathematical problem solving values for each AQ category. The research subjects are shown in table 4.1 below,

Tabel 4.1. Main Research Subjects

Students Category	Selected Subject	Characteristik
AQCL	Idil Muftih (IDF)	Be diligent, active when PBM is good, ask questions, answer, be polite, discipline, complete tasks on time, be actively involved in activities, extracurricular Scouts
	Fitri Yusuf (FYS)	Be diligent, active when PBM both asks, or answers, Polite, Discipline, completing tasks on time
AQCM	Titi Nurismi (TNR)	Diligent, quite active in PBM, Polite, Discipline, Complete tasks on time
	NurAfniNasir (NAN)	Diligent, quite active in PBM, Polite, Discipline, Complete tasks on time

AQQT	Hasrul (HSR)	Often late for classes when PMB has started, Vacuum during PBM, Very rarely collect assignments
	Asril Afandi (ASF)	Often late for class, when PMB has begun, Vacuum during PBM, Very rarely collect assignments

From the results of the study, the climber students did not give up easily in solving the given problem. When finding a problem with a problem, the student climber will continue to try to solve the existing problem until it is complete. Here students will try to get the correct results according to what is desired in the problem. If students have gotten the results, students will not easily believe the results they have obtained. Students will first check the results they have obtained to believe that the results they have obtained are correct.

From the results of this study that when students campers faced with mathematical problems and students find problems with these problems, students will still try to be able to solve existing problems. Students will try to get the results of problem solving given even though students do not know whether the answers obtained are correct or not. If the student has got the result, the student will not try to re-check the result that he has obtained unless instructed. This is in accordance with the theory from Stoltz (2004) which says that people with the camper type are people who are easily satisfied with what has been achieved.

From the results of the study that when quitter students are faced with mathematical problems and students find problems with these problems, students do not have the desire to be able to solve the problems that exist in the problem. Students will prefer to avoid and give up on existing problems rather than having to try it first. Students only reach the stage of understanding the problem, namely only quoting information directly to the problem without adding other information obtained through experience and knowledge possessed. Therefore the quitter cannot proceed at the stage of making a settlement plan because the data or information obtained from the problem is incomplete.

In the KTSP curriculum and curriculum 2013 revealed that "The Focus of Mathematics Learning is Problem Solving. Krulik and Rudnik (1995) in Alimuddin (2012) define problem solving as:

"it [problem solving] is the mean by which an individual uses previously acquired knowledge, skill, and understanding to satisfy the demand of an unfamiliar situation."

The quotation above shows that problem solving is an individual's effort to use his knowledge, skills, and understanding to find solutions to a problem.

Related to this, each student in dealing with and overcoming a different problem that is the level of students who continue to struggle, stop in the middle of the road or backward, students who are persistent in learning with those who are lazy to learn, students who like to use fraudulent methods and instant to achieve high grades and ensure high passing scores with unknown ones through a long and ongoing process survive The ability that exists in a person in facing a challenge or problem and looking for a solution to that problem is known as the Adversity Quotient (AQ) Stoltz (2004: 18).

The fundamental difference in the problem solving profiles between climber, camper and quitter subjects lies in their ability to think abstractly and the ability to deal with difficulties while working on a given mathematical problem solving problem, namely the problem of a linear system of three-variable equations. Climber subjects do look superior in thinking compared to subjects with camper and quitter. This shows that the learning achievement of climber students is better than that of camper and quitter students. Climber subjects who always try and do not give up easily in the face of difficulties to solve problems, welcome challenges and can motivate themselves, have high spirits, and struggle to keep trying all means until finding the right answer. If they encounter obstacles, they quickly make changes in mindset and decide to take other ways that might provide the right solution. They look persistent and never give up when solving problems. Although they acknowledge that the extended abstract problem is the most difficult problem compared to the previous problem. However, this is not an obstacle for them to keep trying.

In responding to the problem, the higher the control (control) possessed by someone, someone will consider the difficulty in working on mathematical problem solving problems can still be controlled, and conversely the lower the control (control) possessed by someone, someone will assume the difficulty in solving math problem solving cannot be controlled. In the dimensions of origin (ownership) and ownership (recognition), the higher one's AQ assumes success always exists and the cause of difficulties comes from outside, and vice versa the lower one's AQ then considers success does not always exist and the cause of difficulties comes from oneself . In the reach dimension, the higher AQ someone is, the more able he is to limit the range of his problem in working on mathematical problem solving, and conversely the lower the AQ of a person, the less able he is to limit the extent of his problem in working on mathematical problem solving. In the Endurance dimension, the higher the AQ a person is, the more able to deal with various difficulties in working on mathematical problem solving problems and view that success will last long or even permanent so it is necessary to double check the answers obtained. Likewise, on the contrary, the lower the Endurance dimension, the lower the AQ of a person, the greater the person facing various difficulties, is always there in working on mathematical

problem solving problems and views that success will not last long so it is not necessary to re-check the answers obtained. (Stoltz, 2004).

This process is not an easy thing, requires reasoning and patience in taking it. But again, they are subjects with high AQ (climber). Their internal drive has shown that they see adversity as a challenge, not as an obstacle. In achieving a goal, AQ influences one's work ethic and persistence. The effects that arise can be seen through a number of changes in attitude, behavior, state of cognition and one's actions in dealing with problems. This fact is in line with Nurhayati's research (2012: 72) which states that students who have a high Adversity Quotient (AQ) are better able to overcome the difficulties being faced. However, students with lower levels of Adversity Quotient (AQ) tend to consider difficulties as the end of the struggle and cause student achievement to be low. This is supported also by Stoltz's findings (Christina, 2012: 13) showing that people with high Adversity Quotient (AQ) outperform those with low Adversity Quotient (AQ). When solving mathematical problems, students do the activity of thinking and when thinking, then the student person plays an important role. In this case, the personality of each student is not seen as a passive factor but rather a factor that actively controls conscious action. This is where Adversity Quotient (AQ) will act as a factor that has a major influence on mathematical thinking ability. Having strong confidence will make someone have motivation, courage, perseverance in carrying out the tasks given, and vice versa having low confidence will keep someone from difficult tasks and quickly give up when facing obstacles.

Therefore, the success of students' mathematics learning does not always depend on the cognitive aspects. There is another aspect that contributes to the effect of Adversity Quotient (AQ), which is to foster a great abstinence from giving to students. Unyielding will play a role in generating encouragement to continue to try all means so as to produce students who are tenacious and never give up in solving problems. This is supported by Nurhayati's (2012) research that students who have a high Adversity Quotient (AQ) will be able to overcome obstacles in front of them and achieve learning achievements including mathematics..

The results of this study indicate that with a high abstinence, students can overcome the difficulties they face. Students see every difficulty as an interesting challenge that must be faced, not as an obstacle that is simply ignored. By growing Adversity Quotient (AQ) on students, students are not easily discouraged when facing difficulties and become smart individuals in determining the right strategies to solve the problems they face.

CONCLUSION AND SUGGESTION
Conclusion
Solving students' mathematical problems with four stages of Polya has the characteristics of Adversity Quotient that is inherent in students with the following profiles: (1) Profiles of mathematical problem solving students who have a Climber type of Adversity Quotient (AQ) are (a) In the stage of

understanding the problem, the climber student connects the information to the problem with knowledge and experience in solving similar problems, can interpret the problem by illustrating the known into the form equation according to its understanding through writing and being able to use and explain the meaning of symbols used; (b) At the stage of planning problem solving, the student climber plans the formula or method to be used ie using a formula or method and calculations in verbal language to answer the problem given; (c) At the stage of solving the problem according to plan, the climber student performs the correct calculation through the formula planned beforehand; (d) In the stage of checking the answers, the student climber will not be satisfied with the results obtained before checking the answers again by returning the results obtained to the things known to the problem. (2) Profile of mathematical problem solving students who have a Camper type Adversity Quotient (AQ) are (a) In the stage of understanding the problem, camper students connect between information on the problem with knowledge and experience in solving similar problems, can interpret the problem by illustrating the known into the form equation according to his understanding through writing and being able to use and explain the meaning of the symbols used; (b) At the stage of planning problem solving, camper students plan the formula or method to be used ie using a formula or method and calculation in verbal language to answer the problem given; (c) At the stage of solving the problem according to plan, the camper student performs the calculation through the formula planned beforehand; (d) In the stage of checking answers, the camper student is easily satisfied with the results obtained without having to double check the answers obtained.

The mathematical problem solving profile of students who have a Quitter Adversity Quotient (AQ) type is (a) In the stage of understanding the problem, the quitter student does not want to try to link information to the problem with knowledge and experience in solving similar problems, cannot interpret the problem by illustrating the problem known in the form of equations according to his understanding through writing and unable to use and explain the meaning of the symbols used; (b) At the stage of planning the problem solving, quitter students have given up on difficulties encountered without trying first to plan the formula or method to be used to answer the problem given; (c) At the stage of solving problems according to plan, quitter students have not been able to do calculations properly because they cannot plan the formula that will be used to answer the problem; (d) In the stage of checking the answers, the quitter student has not been able to check the answers again because he cannot work on the given problem.

Suggestion

Based on the final conclusions of this study, the researchers suggest a number of things which are as follows. (1) The results of this study are expected to be a recommendation for teachers to improve student learning achievement in general and in learning especially mathematics, teachers should pay attention to students' Adversity Quotient (AQ) by providing motivation and attention to students and designing learning tools that enable students to have AQ types quitters can be upgraded to camper type, and students who have AQ type camper

can be upgraded to climber type, and students who have AQ type climber to stay afloat. (2) The results of this study are expected to be a source of information for students that they must never give up in mathematics learning activities. Unyielding will play a role in generating encouragement to continue to try all means so as to produce students who are tenacious and never give up in solving problems. (3) For relevant research, in order to re-examine the mathematical problem solving profile of students in terms of a more complete Adversity Quotient (AQ), it is necessary to verify by connecting several materials and to make better AQ instruments so that they can precisely and accurately determine the respective AQ categories - students.

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