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Mathematical problem solving ability of 8th grade students in terms of adversity quotient using discovery learning

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Abstract

The purpose of this research was to (1) find out the completeness of mathematical problem-solving abilities of 8th-grade students in Discovery Learning; (2) description of mathematical problem-solving abilities aspects of 8th-grade students who have a climbers types; (3) description of mathematical problem-solving abilities aspects of grade 8th students who have a campers types; (4) description of mathematical problem-solving abilities aspects of 8th-grade students who have a quitters types. This research is mixed methods using a sequential explanatory model. The design is a one-shot case study. The sample class is 8D. Research subjects consisted of 2 students of climbers types and 4 students of climbers types. The results showed that (1) mathematical problem-solving abilities of 8th-grade students in Discovery Learning achieved classical and individual completeness; (2) climbers students can solve all of the problem-solving indicators; (3)) campers students can solve three of problem-solving indicators; (4) quitters students were not found in this research so couldn't be described.

1. Introduction

Mathematics is a universal science that is useful for human life and underlies the development of modern technology. Mathematics has an important role in some of scientific disciplines and advancing human thought power (Decree of The Indonesian Minister of Education and Culture Number 58, 2014).

Observed the relationship of mathematics learning in school and the quality of human resources, it can be concluded that mathematics learning from the primary level affects the quality of human resources which has an impact on the progress of science and technology.

Many things appear from the results of the mathematics learning process. The results depend on the importance of the learning process. According to Dahlan (2014), the meaning of learning mathematics will visible if the activities in mathematics learning contain a mathematics learning process standard. The mathematics learning process standard includes understanding, reasoning, communication, connection, problem solving, and representation (NCTM, 2000). Every point of the standard process affects each other, as well as problem solving. Based on the principles and standards of school mathematics of *National Council of Teacher Mathematics* (NCTM, 2000) said that "Problem solving is an integral part of all mathematics learning".

One of the goals of mathematics learning is problem solving ability. This is stated in the statement, "The next five Standards address the processes of problem solving, reasoning and proof, connections, communication, and representation" (NCTM, 2000). Ulya (2015) also said that problem solving skills need efforts so students get used to face up the problems, both in the mathematics cover and problems in real life. Problem solving in this case includes understanding the problems, discussing mathematical models, solving the designed model, and solving the obtained solution.

Karatas & Baki (2017) said that: "problem solving is recognized as an important life skill involving a range of processes including analyzing, interpretting, reasoning, predicting, evaluating and reflecting". Branca (Syaiful, 2012) said that problem solving ability are a general goal of learning mathematics as the heart of mathematics. Problem solving includes methods, procedures, and strategies which are the core

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and main processes in the mathematics curriculum. Problem solving is a basic ability in mathematics learning. Kesumawati said that mathematical problem solving is something that recognized, asked, and information adequacy; can make or arrange mathematical models; choose and develop a solution strategy; and answer the truth (Chotimah, 2014). This is in line with the problem solving stages according to Polya (1973), that is (1) Understanding the Problem, (2) Devising a Plan, (3) Carrying Out the Plan, (4) Looking Back.

PISA (Programme for International Student Assesment) which was initiated by OECD (the Organisation for Economic Co-operation and Development) is an international study of achievment of student literacy, mathematics and science. The results of PISA study are one of measure to see the ability of problem solving (Aini & Siswono, 2014). The 2015 PISA literacy results released in December 2016 reinforce that the students mathematical abilities in Indonesia are still low. The PISA test and survey involved 540,000 students from 70 participant countries. The average score of Indonesian students' in science, reading, and mathematics respectively ranked 62, 61, and 63 with the average score for mathematics is 386. It shows that Indonesia is in the red zone, which is still below the OECD average. The data shows that there are differences in the average score between Indonesia and Singapore as the country with the highest average. Indonesia got 386 and Singapore got 564 (OECD, 2016). The result of problem solving ability on the PISA test is assumed that the mathematical problem solving ability of Indonesian students is also low.

Bruner (Lefudin, 2017) argues that the learning process by finding (discovery) concept is corresponding with the right systematic and actively carried out humans give the best results. Discovery learning is a learning model that requires students to find their own conclusions or solutions. According to Joolingen (Mawaddah, 2015), Discovery learning is learning where students build their own knowledge by experimenting and making conclusions or concepts from the results of these experiments. Using the discovery learning model, students are given problems to develop mathematical problem solving abilities that are adjusted to the indicators of problem solving abilities. It is hoped that discovery learning models can improve students' mathematical problem solving abilities. This is reinforced by the results of Yuliani and Saragih research (2015) which states learning with discovery learning models can improve mathematical problem solving abilities.

Adversity Quotient (AQ) was introduced by Paul G. Stoltz is the individuals ability to face up or survive the life challenges and face up all difficulties as a process to develop themselves, potential, and achieve a certain goal. Adversity Quotient (AQ) is a conceptual framework that is used to determine the response of individuals to face up difficulties (Stoltz, 2007). According to Hema & Gupta (2015), Adversity Quotient is a conceptual framework that appears to understand and improve all aspects of success; a measure of how a person responds to difficulties that can be understood, changed, calculated and interpreted. Individuals who apply Adversity Quotient will be able to perform optimally when facing difficulties. Research conducted by Matore *et al.* (2015) shows that Adversity Quotient has the potential to be studied as a perspective of success factors for students so Adversity Quotient is recommended to be introduced and applied so students can prepare themselves to face difficulties in the future. Dalam pembelajaran matematika, *Adversity Quotient* dapat didefinisikan sebagai kecerdasan yang dimiliki siswa dalam mengatasi kesulitan belajar matematika atau lebih lanjut dalam menyelesaikan masalah matematika (Ardiansyah, 2018). The height or low Adversity Quotient is determined by four dimensions, namely Control, Origin and Ownership, Reach, Endurance (commonly abbreviated as CO2RE). Control relates to how a student is in control of the problem at hand. Origin and Ownership relates to how students identify what is the origin of the difficulty and the extent to which the student is able to acknowledge the consequences of the difficulties. Reach explains the extent to which a problem that arises can affect the other side of life of students who experience it. Endurance explains how a student looks at the duration of the problem that arises.

Based on the description above, researchers observe about description of "Mathematical Problem Solving Ability of 8th Grade Students in Terms of Adversity Quotient Using Discovery Learning".

2. Methods

This research includes the type of research mixed methods is procedures to collect, analyze, and mix quantitative and qualitative methods in one study to solve the problems in research. The design in this research is sequential explanatory.

A sequential explanatory approach was chosen because quantitative results data are only provide a general description of the research problem, so analysis of qualitative data collection need to filter, expand, or explain the general picture of the quantitative data. This design includes both of quantitative and qualitative data to obtain quantitative results from a population in the first stage, and then refine or describe these results by detailed qualitative exploration in the second stage. The sequential explanatory design in this research summarized in Figure 1.

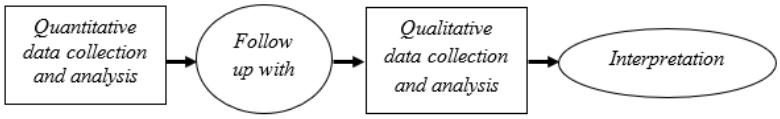

Figure 1. The Sequential Explanatory Design

First, analyze the quantitative data in this research about student learning result on aspects of mathematical problem solving abilities, then an analysis of qualitative data was obtained from questionnaires and interviews with research subjects. Quantitative methods are used to determine whether the mathematical problem solving ability of 8th Grade Students at 24th Semarang Junior High School using discovery learning reaches learning completeness; while the qualitative method is used to find out how the 8th grade students mathematical problem solving abilities in terms of adversity quotient using discovery learning.

In this research, researchers obtained data directly by observation and interaction with research subjects. Data collected in the form of words or pictures, do not emphasize numbers. This research is a research that produces descriptive data in the form of words of the author or verbally from people and observable behavior. The data described is the mathematical problem solving ability of students in terms of adversity quotient using discovery learning.

The quantitative method in this research was used to test whether learning using discovery learning model was effective in students' mathematical problems solving. Quantitative research uses a one-shot case study design which there is a group that with treatment and then observed. Treatment is the independent variable, and the results are the dependent variable. The design according with the objectives to be achieved, namely to test whether discovery learning models is effective to completeness the students' mathematical problem solving abilities. The research design of the One-Shot Case Study showed in Table 1.

Table 1. One-Shot Case Study Design

Treatment	Posttest
X	O

Explanation:
X = Using discovery learning model
O = The result of students' mathematical problem solving abilities

Data collection techniques in this research include observation, tests, questionnaires, and interviews. The instruments used in this research include the Adversity Quotient questionnaire, Learning Implementation Plan (RPP), mathematical problem-solving ability tests, and interview guidelines. Quantitative data analysis using t test and z test. Students 'mathematical problem solving abilities in terms of Adversity Quotient were analyzed descriptively based on the results of tests and interviews with several students who were selected as research subjects so that conclusions were obtained about mathematical problem solving abilities in terms of students' Adversity Quotient.

3. Results & Discussions

3.1. Quantitative Research Analysis

The study was conducted in an experimental class, VIII.D class using the Discovery Learning model. A math problem solving ability test was conducted at the end of the meeting. Mathematical problem-solving ability test data is presented in the following table.

Table 2. Data of Mathematical Problem Solving Ability Test

Class	N	Average	STDEV	Max. Value	Min. Value
Eksperiment	31	80,290323	10,59306	97	55

Based on the results of calculations on SPSS 23.0 obtained significant data values namely sig = 0.128. It is clear that sig = 0.128> 0.05, so H_0 is accepted. It means that the test data mathematical problem-solving skills using the Discovery Learning model come from normally distributed populations.

Based on the results of t-test calculations using Ms. Excel is obtained $t_{hitung} = 6{,}5666$ and from table t is obtained $t_{tabel} = t_{(0,95)(29)} = 1{,}699$ with α = 5%. Because $t_{hitung} > t_{tabel}$, H_0 is rejected. This means that the average value of the tests of mathematical problem solving abilities using the Discovery Learning model is more than 68 so that the average results of the class tests using the Discovery Learning model have reached minimum criteria completeness.

Berdasarkan hasil perhitungan uji proporsi satu pihak dengan Ms. Excel diperoleh $z_{hitung} = 2{,}077234$ dan dari tabel *z* diperoleh $z_{tabel} = z_{(0,5-\alpha)} = z_{0,45} = 1{,}64$ dengan $\alpha = 5\%$. Karena $z_{hitung} > z_{tabel}$ maka H_0 ditolak. Artinya proporsi siswa yang nilai kemampuan pemecahan masalah matematika dengan menggunakan model *discovery learning* mencapai nilai KKM lebih dari 75%. Jadi siswa pada kelas yang menggunakan model *discovery learning* yang memperoleh nilai ≥ 68 mencapai ketuntasan klasikal.

Based on the results of the calculation of the proportion of one party test with Ms. Excel is obtained $z_{hitung} = 2{,}077234$ and from the z table is obtained $z_{tabel} = z_{(0,5-\alpha)} = z_{0,45} = 1{,}64$ with α = 5%. Because $z_{hitung} > z_{tabel}$, H_0 is rejected. It means that the proportion of students who get value of mathematical problems solving ability using the discovery learning model reaches a standard value more than 75%. So students in the class who use discovery learning models who get a value more than 68 achieve classical completeness.

3.2. Qualitatif Research Analysis

Qualitative data analysis in research conducted by data reduction, data presentation, and conclusions. Data reduction begins with correcting the value of a mathematical problem solving test, correcting the results of the adversity quotient questionnaire, and determining the subject to be interviewed.

The analysis of mathematical problem solving ability is adjusted to the indicators of mathematical problem solving ability in this study, namely (1) Understanding the Problem, (2) Devising a Plan, (3) Carrying Out the Plan, (4) Looking Back.

The Adversity Quotient Questionnaire consists of 20 cases, each of which contains two statements. Based on the results of the analysis of the Adversity Quotient questionnaire of 31 students of VIII.D at 24th Semarang Junior High School there were 10 students with high Adversity Quotient (climbers) and 21 students with moderate Adversity Quotient (campers).

The results of the Adversity Quotient questionnaire are compared with the intervals of each Adversity Quotient category. The interval can be seen in the following image.

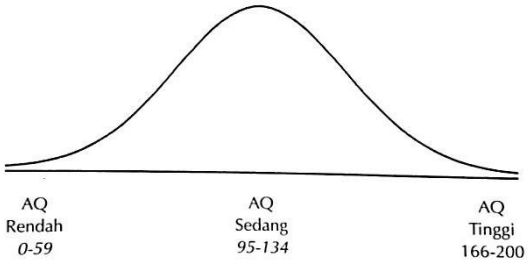

Figure 2. Normal Distribution of Adversity Quotient Scores

Table 3. Categorization of Adversity Quotient Scores

Skor	Kategori
166-200	Climbers
135-165	Campers-Climbers
95-134	Campers
60-94	Quitters-Campers
0-59	Quitters

Based on the Adversity Quotient scale that has been distributed to 31 students in the experimental class, it is known that there are three groups of students based on the Adversity Quotient, namely students in the climbers, campers-climbers, and campers categories. Mathematical problem-solving ability tests were held for all students of the experimental class and then analyzed according to the student's Adversity Quotient group. Based on the results of tests of mathematical problem solving abilities obtained that there are differences in the average value of students' mathematical problem solving abilities for each group Adversity Quotient.

Table 4. Classification of Experimental Class Students Based on Adversity Quotient

Type	Total Student	Percentage (%)
Climbers	10	32,26
Campers-Climbers	14	45,16
Campers	7	22,58
Total	31	100

Overall, judging from the average mathematical problem solving ability test scores, it will be found that the average value of mathematical problem solving ability of climbers subjects is higher than the average value of mathematical problem solving ability of subject campers-climbers. The average value of the mathematical problem solving ability of subject climbers is higher than the average value of the mathematical problem solving ability of subject campers. Similarly, the average value of the mathematical problem solving ability of the campers-climbers subject is higher than the average value of the mathematical problem solving ability of the campers subject.

Table 5. Student Distribution Based on Results of Mathematical Problem Solving Ability Test for Each Adversity Quotient Type

Code	Value	AQ Score	Explanation
E16	97	187	Climbers
E10	94	181	Climbers
E14	94	179	Climbers
E25	94	180	Climbers
E02	92	169	Climbers
E03	92	179	Climbers

E31	92	189	Climbers
E06	85	170	Climbers
E17	87	166	Climbers
E19	87	184	Climbers
E23	88	164	Campers-Cimbers
E11	84	159	Campers-Cimbers
E29	84	158	Campers-Cimbers
E12	83	158	Campers-Cimbers
E07	81	160	Campers-Cimbers
E09	81	150	Campers-Cimbers
E13	81	162	Campers-Cimbers
E22	81	163	Campers-Cimbers
E33	81	161	Campers-Cimbers
E08	79	163	Campers-Cimbers
E26	76	153	Campers-Cimbers
E01	75	145	Campers-Cimbers
E18	73	145	Campers-Cimbers
E21	71	140	Campers-Cimbers
E24	69	130	Campers
E15	68	125	Campers
E05	68	129	Campers
E04	67	130	Campers
E28	66	125	Campers
E20	64	115	Campers
E27	55	120	Campers

Based on the results of the study, it was found that climbers students do not always have higher mathematical problem solving abilities than students campers-climbers. This can be seen in the subject climbers E06, E16, and E18 which have lower mathematical problem solving ability test scores than the campers-climbers subject, E23. From the results of the study, students climbers and campers-climbers always have higher mathematical problem solving abilities than students campers.

3.3. Mathematical Problem Solving Ability of Climbers Subject

Subject S-1can solve problems in detail. Subject S-1understands the purpose of the questions given and can develop answers well. After being confirmed by interviews, Subject S-1can explain her answers back in detail and smoothly until the final results. Subject S-1has written what is known and what is asked from the problem, for example the variables correctly, solve the problem in the right way, and conclusions in accordance with the context of the problem.

Based on scores of mathematical problem solving ability test and the results of interview with subject S-1, the following is presented a summary of the achievement indicators of the mathematics problem solving skills from subject S-1.

Table 6. Recapitulation of Mathematical problem solving ability Test Subject S-1

No.	Indicators	Explanation
1.	Understanding the Problem	Complete
2.	Devising A Plan	Complete

3.	Carrying Out the Plan	Complete
4.	Looking Back	Complete

Subject S-2 can solve problems in detail. Subject S-2 understand the purpose of the questions given and can develop answers well. After being confirmed through interviews, Subject S-2 can explain their answers back in detail and smoothly until the final results. Subject S-2 has written what is known and what is asked from the problem, for example the variables correctly, solve the problem in the right way, and conclusions in accordance with the context of the problem.

Based on scores of mathematical problem solving ability test and the results of interview with subject S-2, the following is presented a summary of the achievement indicators of the mathematics problem solving skills from subject S-2.

Table 7. Recapitulation of Mathematical problem solving ability Test Subject S-2

No.	Indicators	Explanation
1.	Understanding the Problem	Complete
2.	Devising A Plan	Complete
3.	Carrying Out the Plan	Complete
4.	Looking Back	Complete

Subject S-1 and S-2 have fulfilled all indicators of Mathematical Problem Solving Ability tests. Although both subjects have found all four indicators, there are still differences between the two subjects. Subject S-1 is more structured and concise in explaining. Subject S-1 also have a good understanding of the concept of the material being taught proven in the interview process. Subject S-2 already has an understanding of the concept but lacks confidence in delivering during the interview.

Overall climbers can complete all of four indicators of mathematical problem solving abilities. This is because climbers have clear goals and they can work hard. They also have high courage and discipline. Climbers have the ability to face up severe difficulties and keep trying to move forward. Group climbers can continue to hone themselves to become better personalities and can teach others to deal with difficulties as they do. Climbers often feel strongly about something bigger than themselves. Climbers believes that everything can and will be done, even if others are negative and ensure that the path is not possible. Students with the type of climbers are students who are enthusiastic in learning mathematics. They have high courage and discipline.

Sudarman (2012) argues that students with type of climbers are those who complete the tasks of the teacher well and on time. Stoltz (2007) said that climbers feel real excitement and are sure that everything will definitely be done. They dare to go through the difficulties of learning. Climbers always use languages that are full of possibilities and opportunities (Paramita, 2017). They talk about what can be done and how to do it.

3.4. Mathematical Problem Solving Ability of Campers Subject

Subject S-3 understands the purpose of the questions given and can develop answers well. After being confirmed by interviews, subject S-3 can explain their answers well enough back to the final results. subject S-3 experienced enough confusion with question number 6 starting at the problem example. However, Subject S-3 has written what is known and what is asked of the problem, for example the variables correctly, solve the problem in the right way, and conclusions in accordance with the context of the problem.

Based on scores of mathematical problem solving ability test and the results of interview with subject S-3, the following is presented a summary of the achievement indicators of the mathematics problem solving skills from subject S-3.

Table 8. Recapitulation of Mathematical problem solving ability Test Subject S-3

No.	Indicators	Explanation

1.	Understanding the Problem	Complete
2.	Devising A Plan	Complete
3.	Carrying Out the Plan	Enough
4.	Looking Back	Enough

Subject S-4 can solve problems well. Subject S-4 understands the purpose of the questions given and can develop answers well. After being confirmed by interviews, subject S-4 can explain their answers well enough back to the final results. subject S-4 experienced enough confusion with questions number 4 and 6. However, subject S-4 had written what was known and what was asked of the problem, assumed the variables correctly, solved the problem in the right way, and the conclusions in accordance with the context the problem.

Based on scores of mathematical problem solving ability test and the results of interview with subject S-4, the following is presented a summary of the achievement indicators of the mathematics problem solving skills from subject S-4.

Table 9. Recapitulation of Mathematical problem solving ability Test Subject S-4

No.	Indicators	Explanation
1.	Understanding the Problem	Complete
2.	Devising A Plan	Complete
3.	Carrying Out the Plan	Enough
4.	Looking Back	Enough

Subject S-3 and S-4 have fulfilled all indicators of the ability to solve mathematical problems although there is little doubt about some questions. Although both subjects have found all the indicators, there are still differences between the two subjects. Subject S-3 have a unique way of solving problems. Subject S-4 has its own way of solving problems even though it is also thought of by other students. Subject S-3 can do the problems well and have no difficulty in doing the calculations. Subject S-4 still feel hesitant in doing the calculations, especially to determine the method of settlement. This is known when interviewing subject S-4.

Generaly, campers-climbers type can find three to four indicators of problem solving ability. This is because campers-climbers are children who are willing to take risks but have not yet completely implemented them. In themselves they feel not too satisfied with the situation that has been achieved. They still have the confidence to achieve better results if they are more active in trying. The campers-climbers group may have survived enough to overcome the challenges and exploit most of their potential to continue to grow.

Campers-climbers students are students who are trying to get optimal learning results even though sometimes they feel lacking enthusiasm in achieving it. This type of student is quite tough in facing difficulties as long as he refuses to give up. Campers-climbers students are better able to withstand learning difficulties than campers students, but their capacity is still below those of climbers.

Subject S-5 is good enough in solving problems. Subject S-5 is enough to understand the purpose of the problem given and can develop answers well. After being confirmed through interviews, subjects S-5 can explain back the answers they wrote quite well until the final results. Subject S-5 experienced enough confusion with questions number 4 and 6. However, Subject S-5 had written what was known and what was asked of the problem, assumed the variables correctly, solved the problem in the right way, and the conclusions in accordance with the context the problem.

Based on scores of mathematical problem solving ability test and the results of interview with subject S-5, the following is presented a summary of the achievement indicators of the mathematics problem solving skills from subject S-5.

Table 10. Recapitulation of Mathematical problem solving ability Test Subject S-5

No.	Indicators	Explanation

1.	Understanding the Problem	Complete
2.	Devising A Plan	Enough
3.	Carrying Out the Plan	Enough
4.	Looking Back	Not Complete

Subject S-6 is not good at solving problems. Subject S-6 did not understand the purpose of the problem. After being confirmed through interviews, subject S-6 can explain their answers well enough back to the final results. Subject S-6 experienced enough confusion in several questions. However, Subject S-6 has written down what is known and what is asked of the problem, for example the variables, and try to solve the problem.

Based on scores of mathematical problem solving ability test and the results of interview with subject S-6, the following is presented a summary of the achievement indicators of the mathematics problem solving skills from subject S-6.

Table 11. Recapitulation of Mathematical problem solving ability Test Subject S-6

No.	Indicators	Explanation
1.	Understanding the Problem	Complete
2.	Devising A Plan	Enough
3.	Carrying Out the Plan	Enough
4.	Looking Back	Not Complete

Subject S-5 can answer until three indicators of mathematical problem solving ability. Subject S-6 can fulfill the three indicators. Subject S-5 is superior compared to subject S-6 on the second and third indicators. This is evident from the results of the work of both subjects.

Generally, campers type can find three indicators of mathematical problem solving ability. For the third indicator, which is implementing the strategy, some students campers find these indicators and few do not find, for the example is subject S-6. Meanwhile, in general the campers students did not find the fourth indicator which was to determine the conclusion of the problem and looking back. This is because campers are children who do not want to take risks that are too big and are satisfied with the circumstances that have been achieved.

Campers sometimes ignore the possibilities to be gained from the effort they do. For example they are not trying to learn how to get the right answer so that the third indicator is not found. They did not try to write down the complete problem solving so that the fourth indicator was not met. Campers type individuals feel quite satisfied in the middle position. They feel quite happy with their own illusions about what already exists and ignore the possibility to see or experience what might happen. They do not maximize their efforts even though there is an opportunity to be able to achieve the best results.

When studying mathematics, campers type do not try as much as possible, but only try modestly. They assume that there is no need to achieve high scores, which are important for graduation, they do not need to win important championships. The campers group is actually quite good in dealing with the difficulties of the problem as long as things are going relatively smoothly. However, campers may become discouraged as problems and challenges in learning accumulate.

According to Stoltz (2007), campers feel quite happy with already exists and ignore what is still possible. They give up the opportunity to progress, which in fact can be achieved if directed properly. Campers try to be better and still have initiatives. Because they only want to be in the safe zone, they do the work they are given only to make sure they don't get into further difficulties such as being scolded by the teacher, being given poor grades, or being punished.

Based on the recapitulation of the achievement of mathematical problem solving ability test in terms of adversity quotient, all of students can find until two indicators, namely Understanding the Problem and Compiling the Plan. In addition, some students have also found indicators three and four, namely Implementing Plans and Looking Back.

The results of the analysis of mathematical problem solving abilities of students of 8th Grade at 24th Semarang Junior High School and interviews with several research subjects from each group of students based on their Adversity Quotient obtained that the mathematical problem solving abilities of climbers type is better than campers-climbers and campers type; the mathematical problem solving abilities of campers-climbers type is better than campers type. This is based on the results of mathematical problem solving abilities test and the results of interviews with research subjects that have been previously selected. The mathematical problem solving abilities of climbers type is better than campers-climbers and campers type because climbers have higher fighting ability than campers-climbers and campers type. The mathematical problem solving abilities of campers-climbers type is better than campers type because campers-climbers type have a higher fighting ability than camper type.

The results of this research contradict previous research, including research by Sugesti, Budiyono, & Subanti (2014) and Wicaksana & Usodo (2016) found that climbers had better mathematics learning achievement than campers. Contrary to that, in this study we found that climbers did not always have better mathematical creativity than campers-climbers and campers. Likewise, campers-climbers did not always have better mathematical creativity than campers. Nevertheless, we found that average mathematical creativity of subjects climbers is higher than the average mathematical creativity of the subjects campers-climbers. The average mathematical creativity of subjects climbers was higher than the average mathematical creativity of the subjects campers. Likewise, the average mathematical creativity of the subjects campers-climbers is higher than the average mathematical creativity of the subjects campers.

3.5. Mathematical Problem Solving Ability of Quiters Subject

Descriptions of mathematical problem solving abilities using Discovery Learning in terms of students' Adversity Quotient are done by analyzing the results of students' mathematical problem solving abilities tests and the results of interviews conducted with selected research subjects. However, in this research was not found research subjects from quiters type. The lowest score of the adversity quotient score in this research was 120. Therefore the researcher was unable to describe the mathematical problem solving ability of students from the quiters type. This quiters type has an Adversity Quotient score between 20-59. This type is the lowest of the level of Adversity Quotient.

4. Conclusion

Based on the results and discussion about Mathematical Problem Solving Ability of 8th Grade Students in Terms of Adversity Quotient Using Discovery Learning, it can be concluded that (1) mathematical problem solving abilities of class 8 students at 24th Semarang Junior High School using Discovery Learning is completeness the standard of minimum learning; (2) Students with climbers type can write information that is known and asked, understand well the problem, be able to calculate correctly so that they find the right answer, and be able to write conclusions that fit the context of the problem at the end of their work. Besides being able to write complete problem solving, climbers students can also give a number of correct answers. Climbers students have their own way of solving problems. Based on the results of written tests and interviews, climbers students have fulfilled all four indicators of mathematical problem solving ability. Climbers students are able to find all the indicators of the four indicators of mathematical problem solving ability according to Polya. This is supported by the enthusiasm and high curiosity of climbers students, so that the subject always tries to the maximum in working on the given problem and wants to get the best value; (3) Students with campers type can write information that is known and asked of the problem, and can calculate correctly so that the right solution is obtained. Campers students just a little incomplete in writing workmanship questions that are not writing conclusions on problems. Based on the results of written tests and interviews, most of the campers students find three indicators of mathematical problem solving ability. Campers students have not been able to do the problem quickly although some of them are able to solve all the indicators well. Based on the analysis of the results of the study, campers students were able to find three indicators of mathematical problem solving ability. Some of them can get maximum results but not fast when working. There are campers students who are only able to find two indicators of mathematical problem solving ability, campers students can work on problems well but are less than optimal. This is because campers are easily satisfied after trying to work on the problems and often stop working on the questions because

they feel the work has aborted their obligations; (4) Students with quitters type are not found in the sample so researchers cannot describe their mathematical problem solving abilities in this type.

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