**JTAM (Jurnal Teori dan Aplikasi Matematika)**
http://journal.ummat.ac.id/index.php/jtam
p-ISSN 2597-7512 | e-ISSN 2614-1175
Vol. 6, No. 4, October 2022, pp. 905-914

# Reflective Thinking Profile of High School Students in Solving Hots-Type Questions Reviewed from Adversity Quotient

**Sumardi[1], Anggit Cahyaning Tyas[2]**
[1,2]Mathematics Education Study Program, Muhammadiyah University of Surakarta, Indonesia
sum254@ums.ac.id[1], a410180119@student.ums.ac.id[2]

**Article History:**
Received : 24-06-2022
Revised : 25-07-2022
Accepted : 26-07-2022
Online : 08-10-2022

**Keywords:**
Adversity Quotient;
HOTS;
Reflective Thinking.

**ABSTRACT**

The many Adversity Quotient kinds that each individual possesses will have an impact on how they respond to addressing difficulties. The person's efforts to tackle the current difficulties get more difficult as their degree of Adversity Quotient rises.This study's purpose is to describe students' reflective thinking profile in solving HOTS-type questions in terms of level adversity quotient. The subjects of this study, namely three students from class X of senior high school, were taken based on the Adversity Responses Profile (ARP) questionnaire results. The data collection techniques carried out by this study include analysis of test answer results and in-depth interviews. In addition, source triangulation is used for the validity of the data. Data analysis is carried out through five stages: data collection, data reduction, data presentation, data verification, and conclusions. The data table is obtained from the results of the analysis of the answers to the three questions presented in the form of tables based on the components of reflective thinking and problem-solving steps. The research results in this article are three, (1) the reflective thinking profile of students in solving HOTS-type questions can meet the components of reflective thinking and go through the steps of problem-solving Polya: analysis, plan, implement, and evaluation; (2) the reflective thinking profile of students in solving HOTS-type questions cannot meet all the components of reflective thinking, namely the comparing component and through the steps of problem-solving Polya: analysis, plan, implementation, and evaluation. However, at the step of the problem-solving plan, there is one plan that is not by mathematical concepts; and (3) the reflective thinking profile of quitter students in solving HOTS-type problems cannot meet all the components of reflective thinking, namely the contemplating component and not going through all the steps of problem-solving, namely the step of implementing the plan and evaluation. The three types of adversity questions have different reflective thinking profiles according to the criteria of each type.

https://doi.org/10.31764/jtam.v6i4.9376



## A. INTRODUCTION

Mathematics is a fundamental science for students because it focuses on growing students with modern technology and their ability to think (Saraswati & Agustika, 2020). Higher-order thinking skills (HOTS) are critical to meeting the problems of modern technological developments. The development of higher-order thinking skills in students is a diverse educational task. The ability to solve problems is the most critical high-level cognitive skill (Raiyn & Tilchin, 2015). Problem-solving is an essential component of mathematics education that is explicitly included in the curriculum for all mathematics topics from elementary to high

school (Izzah & Azizah, 2019). So mathematics has become the most needed science to improve higher-order thinking skills in solving problems.

Learners will face difficulties when learning mathematics and will find it difficult to determine the steps to solving problems. As a result, students must rethink the knowledge already acquired and stored in their minds. Reflective thinking may be triggered by what the student does when remembering the information, he already has. (Fuady, 2017) shows that reflective thinking does not only focus on students' knowledge but also on how to apply the information to answer the problems faced. Students have carried out a reflective thought process if they can identify the solution to the problem at hand to achieve their goals. In other words, reflective thinking is the student's ability to choose among the information already possessed and store it in his memory to answer any difficulties encountered to achieve his goals. Meanwhile, (Kholid et al., 2020; Rhaudyatun, 2017) show that the capacity of children to relate past information in studying, estimating, making judgments, and testing problems to reach conclusions is reflective thinking.

Reflective thinking is a mental activity in which a person uses the knowledge and experience associated with his current difficulties to identify and solve problems through reflective thinking phases such as responding, describing, and considering (Adha & Rahaju, 2020; Rasyid et al., 2017). The stages of reflective thinking consist of reacting (reflective thinking as an action), reacting, utilizing the knowledge gained from the learning experience of an event to understand the problem, and comparing (reflective thinking as a consideration). The learner connects the knowledge he has learned with the problem he is facing when identifying a problem and contemplating (reflective thinking as a critical inquiry); that is, the student thinks about the problems he faces in identifying problems (Ariestyan et al., 2016; Lutfiananda et al., 2016; Suharna, 2018).

Reflective thinking can also be used to encourage problem-solving thinking processes because it allows students to predict the correct answers, allowing them to explore problems by identifying the mathematical concepts involved, using various strategies, developing thoughts, drawing conclusions, reviewing solutions, and developing alternative strategies (Kurniawati et al., 2014; Odiba & Baba, 2013). Students' reflective thinking ability in memorizing, detecting problems, and reviewing information to relate the difficulties obtained is also needed to solve mathematical problems (Kartikasari & Kurniasari, 2021; Suhaji, 2020). Thinking this significantly gives an idea of the need for reflective thinking in learning activities when solving mathematical problems. Students can use reflective thinking to improve higher-order thinking skills (HOTS). From this the ability to think critically, logically, reflectively, meta-cognitively, and creatively, all of which are high-level thinking abilities (HOTS) (Badjeber & Purwaningrum, 2018). Thus, when reflective thinking is associated with a hots-type question, it becomes one of the skills that help in problem-solving.

Reflective thought processes relate to problem-solving activities (Swastika et al., 2021). In solving the problem, every student will have difficulties. This aligns with those (Yuliatin & Ismail, 2019); students often face challenges and obstacles. As a result, students must increase their fighting power when facing challenges. This fighting power is referred to as adversity quotient (AQ) intelligence, according to Stoltz (Sari et al., 2016; Yuliatin & Ismail, 2019). According to (Yoga, 2016), because there is a component of perseverance and fighting power,

AQ is the determining factor for success. According to (Khumairoh et al., 2020), there are three types of AQ: (1) Climber is a type of person who does not give up quickly in the face of distress; (2) Camper is the type of person who does not struggle ultimately with difficulties but has the desire to face these difficulties, who eventually stops before obtaining a solution; and (3) Quitter is the type of someone who gives up quickly in the face of problems.

From the description above, the summary of the problem in this study is how the reflective thinking profile of students in solving HOTS-type questions is reviewed from the level of Adversity Quotient they have so that the purpose of the study is to describe the reflective thinking profile of students in solving HOTS-type questions in terms of level adversity quotient. The results of this study can be used as a prototype in developing and improving students' reflective thinking skills. The results of this study can also be used by teachers as a reference to create effective learning methods for students by paying attention to the type of adversity quotient of their students.

## B. METHODS

The type of research in this article is descriptive qualitative. Qualitative research is a qualitative narrative description of the situation (Sutama, 2019). This study describes the reflective thinking profile of students in solving HOTS-type questions in terms of their adversity quotient. This research was conducted on class X students of senior high school. In this study, there were three subjects: one student of the AQ type, a quitter, a camper, and a climber. The object of the study is Reflective thinking. Reflective thinking consists of several components, namely (1) reacting; (2) comparing; and (3) contemplating. The data collection methods used in this study were the questionnaire, test, and interview methods. The Adversity Response Profile (ARP) questionnaire is given to the subject.

Subject selection is obtained from the ARP questionnaire score. The ARP questionnaire categorizes the subjects into AQ types of climbers, campers, and quitters. The HOTS-type test questions given to the subject totalled three questions. The three questions are presented as follows:

1. Gabriel bought 5 pairs of socks, 2 pairs of shoes, and 1 bag for IDR 305,000. Indah bought 3 pairs of socks and 1 pair of shoes for Rp. 131,000. Desy bought 3 pairs of shoes and 1 bag for Rp. 360,000. Make a mathematical model that describes the situation!
2. Ani, Nia, and Ina went to the same cafeteria, they bought 3 kinds of cakes that were sold there, namely Cake A, Cake B, and Cake C. Ani bought 2 pieces of cake A, 2 pieces of cake B, and 1 piece of cake C for Rp. 6,700. Nia buys 3 pieces of cake A, 1 piece of cake B, and 1 piece of cake C for Rp. 6,100. Ina bought 1 piece of cake A, 3 pieces of cake B, and 2 pieces of cake C for Rp. 8,000. How much does each cake cost and which cake is the most expensive?
3. Intan, Dewi, Sari, and Leo go to the same bookstore. Intan bought 5 books, 2 pencils, and 1 eraser for Rp. 31,000.00. Dewi bought 4 books and 1 pencil for Rp. 19.000,00. Sari bought 3 books, 1 pencil, and 1 eraser for Rp. 20,000.00. If Leo buys 2 books, 1 eraser, and 1 pencil, calculate the money Leo must pay!

The given HOTS-type questions are validated to see if they can be used. Meanwhile, interviews are conducted to obtain additional information not available on the subject's answer sheet. After the subject has completed the HOTS-type test, the subject is interviewed. Path analysis was used for data analysis techniques in this study. Data analyzed through three stages.

First, the reduction phase conducted to determine important data to achieve the research objectives. Then, the reduced data presented to describe reflective thinking profile. The last one, researchers drawed a conclusion of the data to answer the research question. The data analysis technique begins with analyzing the results of the Adversity Response Profile questionnaire, then analyzing the data from the HOTS type test results that have been done, and then analyzing the data from the interview results. The reflective thinking indicator is used to test the data collected from the HOTS type test. Afterward, the three subjects were interviewed one by one. The data obtained during the interview are processed and shown in the form of reflective thinking profiles of students when answering HOTS questions. In addition, all data are used to obtain conclusions about the reflective thinking profile of students in solving HOTS-type questions in terms of the Adversity Quotient owned by students.

## C. RESULT AND DISCUSSION

In this study, it shows that there are three components of thinking, namely reacting, comparing, and contemplating, that need to be considered by the subject in solving HOTS problems (Ariestyan et al., 2016); in addition to the reflective thinking component, the subject can go through the Polya problem-solving stage is to understand the problem, draw up a plan, realize a plan, and re-examine the answers. Subjects include one student of each type of AQ. Then the three students each do the HOTS questions before the last interview. Obtained from the Adversity Responses Profile (ARP) questionnaire as shown in Table 1.

**Table 1**. Adversity Categories Quotient students

| Initials | ARP questionnaire score | Category |
|---|---|---|
| FIM | 148 | Climber |
| RDAL | 124 | Camper |
| ZM | 90 | Quitter |

The following is a study and review of the reflective thinking profile of high school students when completing HOTS-type questions reviewed through the Adversity Quotient (AQ) level.

### 1. Reflective Thinking Profile of the Subject Climber

The interview results are then used to strengthen the answer results of FIM subjects in solving HOTS-type questions. The data from the interview results are analyzed and triangulated to obtain valid data. The reflective thinking profile of the student is then determined based on valid data. Table 2 shows the results of research on the reflective thinking components of students about the subject of FIM climbers, as shown in Table 2.

**Table 2**. Results of Reflective Thinking Profiles on Camper Subjects FIM

| Components of Reflective Thinking | Problem-solving Steps | Question number | | |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| Reacting | Analysis | √ | √ | √ |
| Comparing | Plan | √ | √ | √ |
| Contemplating | Implement | √ | √ | √ |
| | Evaluation | √ | √ | √ |

Information:

(√) : with a person performs as a reflective component well

(-) : with one does not perform the reflective thinking component well

Based on the result of the reflective thinking profile and interviews with subjects with an adversity quotient climber, it shows that on these three questions, the subject of FIM can go through 3 components of reflective thinking. The subject of the FIM reads and understands the question carefully after the question is received. This suggests that the FIM Subject can collect some information from the questions. The FIM subject has written down the known information on the answer sheet completely; the subject can tell and elaborate on both things without reading the questions at the time of the interview. This shows that the FIM subject has identified the relationship of the information obtained and explained the knowledge about the problem. Thus, FIM subjects have carried out the problem-solving analysis steps and the reacting component process on reflective thinking. In line with Isnaen & Budiarto (2018), climber students can collect information and connect it to their knowledge to solve problems.

Students proceed to the step of the problem-solving plan after the analysis of the problem. The subject of the FIM can determine the solution that will be used to answer the question. Based on their experience or mathematical principles, the subjects of the FIM already know different alternative plans for solving problems. FIM subjects can also analyze the relationship between the questions at hand and the problems that have been faced. Then the FIM subject can analyze the methods used in solving the problem. This explains that students have carried out a comparing process on the components of the reflective thinking process. This agrees with Isnaen & Budiarto (2018), who explained that climber students can determine the strategies to be used in solving problems.

After the problem-solving plan, the subject implements the problem-solving step. At this stage, the subject of FIM can solve problems based on the mathematical concepts that have been studied and can conclude answers precisely. After finding an answer that is considered correct, the student performs the stage of evaluating the answers made and the mistakes from beginning to end. What the student does reflects the characteristics of the AQ type of climber. This shows that students have carried out a contemplating process on the reflective thinking component. Stoltz (2000) describes a climber-type person as having a strong spirit and constantly striving to get the best. It has shown their efforts by reading the questions several times until they fully understand. Students also provide many options that they think can answer problems and provide the best solutions.

## 2. Reflective Thinking Profile of the Subject Camper

The interview results were used to strengthen the answer results of the RDAL subject in solving HOTS type questions. The data from the interview results are analyzed and triangulated to obtain valid data. The reflective thinking profile of the student is then determined based on valid data. Table 3 shows the research results on students' reflective thinking components concerning RDAL camper subjects, as shown in Table 3.

**Table 3**. Results of Reflective Thinking Profiles on Camper Subjects RDAL

| Components of Reflective Thinking | Problem-solving Steps | Question number | | |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| Reacting | Analysis | √ | √ | √ |
| Comparing | Plan | - | √ | √ |
| Contemplating | Implement | √ | √ | √ |
| | Evaluation | √ | √ | √ |

Information:
(√) : Where a person performs as a reflective component well
(-) : Where one does not perform the reflective thinking component well

The results of the research on reflective thinking profiles and interviews with subjects with adversity quotient campers show that in these three questions, RDAL subjects there is one question that does not carry out a comparing process in reflective thinking. The RDAL subject reads the question carefully after the question is received. This shows his efforts by the RDAL subject in collecting information on the questions given. On the answer sheet of the first question, the subject does not write down what information is known and asked about the question, but for the second and third questions, the subject only writes down part of what is known and asked in the question, but the student can reveal the things that are known and asked during the interview. The subject can mention information without reading the problem using his language. This shows that students have already connected the information with the knowledge they have in solving the problems they face. Students can already analyze the problem and engage in the reacting component of reflective thinking. In line with Isnaen & Budiarto (2018), camper-type students can express information, explain what they do and recognize the relationship between concepts in the problems faced and previously stored concepts.

Students proceed to the problem-solving plan step after problem analysis. Students can choose the method to be used to solve the problem. RDAL subjects have known alternatives to solving problems based on previous experience or mathematical principles, but on the first question, the sheet does not write strategies systematically. RDAL subjects can analyze the relationship between the questions and the questions that have been faced. RDAL subjects can analyze the methods used in solving the problem. This shows that RDAL subjects have not performed the comparing process well in reflective thinking. This is in line with Isnaen & Budiarto (2018), camper students will stop looking for other alternatives because they feel they do not want to experience difficulties.

After performing the problem-solving plan step, the RDAL subject performs the implementation step of problem-solving. At this step, the RDAL Subject can solve problems with the mathematical concepts he has. However, in answering the questions, the subject of RDAL does not do with systematic steps according to the mathematical concepts he has, as in SPLTV problems, he does not write down variables. RDAL subjects can also make the exact conclusions as they are worked out. The subject of the RDAL evaluates the solutions and answers that have been made. RDAL subjects can evaluate errors from start to finish. In the opinion of Stoltz (2000), a person with a camper-type AQ has ideas, excitement, and effort. They will strive hard and complete the tasks assigned to them. A camper-type individual may not use all his skills. A

camper type will be satisfied with what has been done and achieved. Therefore, a camper type will stop trying when his efforts are considered sufficient. This suggests that the student is trying but will eventually give up so that the subject of RDAL can be concluded to have carried out the contemplating step of the reflective thought process. What has been done by the students is by the characteristics of an AQ camper type.

### 3. Reflective Thinking Profile of The Subject Quitter

The interview results were used to strengthen the answer results of ZM subjects in solving HOTS-type questions. The data from the interview results are analyzed and triangulated to obtain valid data. The reflective thinking profile of the student is then determined based on valid data. Table 4 shows the results of research on the reflective thinking components of students concerning the ZM quitter subject, as shown in Table 4.

**Table 4**. Results of Reflective Thinking Profiles on ZM Quitter Subjects

| Components of Reflective Thinking | Problem-solving Steps | Question number | | |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| Reacting | Analysis | √ | √ | √ |
| Comparing | Plan | √ | √ | √ |
| Contemplating | Implement | √ | - | - |
| | Evaluation | √ | - | - |

Information:

(√) : Where a person performs the reflective component well

(-) : Where a person does not do the reflective thinking component well

After getting the questions, students read them carefully. The subject has been trying to gather information from the questions. ZM subject does not write down what is known and asked entirely according to the questions on the answer sheet but can retell what is known and asked in the questions during the interview. It shows that students can identify the relationship between the information obtained and explain the stored knowledge regarding the problem at hand. Therefore, students have gone through the reacting component on the reflective thinking component. In line with Isnaen & Budiarto (2018) that when going through the step of understanding the problem, students collect information and connect the information with the knowledge they must solve the problem at hand. In the answer results, the ZM subject did not write down known and asked according to the information. This shows that the student has collected the information but has not contacted to understand it. Students can fulfill the steps of problem analysis.

Students proceed to the problem-solving plan step after problem analysis. In this step, students can plan alternatives for solving problems based on the experiences that students have had. Students can also analyze the relationship between the questions faced and the questions they have faced. Students can also analyze the methods used in solving the questions, students can choose the method that will be used to answer the questions. This shows that ZM subjects carry out the comparing process well in reflective thinking.

On the other hand, students do not look for other options for alternative answers. This shows that students choose the method to use by offering no other solution. The action is in line with the criteria of a quitter type. According to Stoltz (2000), a quitter-type person improves

his performance by thinking that he can no longer make subsequent attempts, which stops his efforts. He believed his abilities were limited and could no longer do more.

After completing the problem-solving plan step, students do the problem-solving implementation step. At this step, the student implements the plan and evaluates the problem's solution. The ZM subject solves problems based on mathematical concepts owned by students, but the calculations they do are not under the desired answers. Subject ZM can make conclusions, but these conclusions are not correct. After implementing the plan, ZM admitted that he had re-examined, but the answers were not carefully checked, so the answers were not under what the questions wanted. Subject ZM is also unable to evaluate errors from beginning to end. Students choose solutions that they believe are appropriate. Students have wasted the opportunity to choose answers according to the request of the questions by limiting their performance and giving up. In line with Isnaen & Budiarto (2018), Quitter students do not check again whether the answers asked are appropriate after finding the answers that are judged to be appropriate. As a result, a student is not used to double-checking their written responses. Therefore, some of the students' answers are errors. This shows that the ZM subject has not performed the contemplating process well in reflective thinking. What students experience corresponds to the description Stoltz (2000) of the traits of those who have a type of AQ quitter. When faced with a problem, people who have an AQ quitter type tend to stop or run away. They put forward minimal work and often choose an easy path.

## D. CONCLUSION AND SUGGESTIONS

In this research on reflective thinking profiles, several conclusions can be drawn according to the student's adversity quotient level: (1) in solving HOTS-type questions, students at the adversity quotient climber level can meet all the components of reflective thinking. These components include reacting, comparing, and contemplating. In addition, the climber students perform the problem-solving steps properly and correctly; (2) in solving HOTS-type questions, camper-level students can meet all the components of the climber but there is one question that does not meet the comparing component in reflective thinking. In addition, camper students can do problem-solving steps, but there is one step of the problem-solving plan that does not match the concept of mathematics: (3) in solving HOTS-type questions, students at the quitter adversity quotient level do not meet all the contemplating components of reflective thinking. Furthermore, students do not perform the problem-solving steps properly and correctly, the steps implement the problem solving and the evaluation of solutions that are not done properly and correctly. Researchers' suggestions for teachers, such as developing thinking skills in terms of the adversity quotient of their students in teaching. In addition, teachers also pay attention to the adversity quotient of students to create effective learning methods for their students.

## ACKNOWLEDGEMENT

The researcher expressed his gratitude for the help and support from many parties, especially to the Mathematics Education Study Program FKIP UMS, SMA Negeri 1 Bulu, and several parties who were not mentioned.

## REFERENCES


Adha, S. M., & Rahaju, E. B. (2020). Profil Berpikir Reflektif Siswa Dalam Memecahkan Masalah Matematika Ditinjau Dari Kecerdasan Logis-Matematis. *Jurnal Penelitian Pendidikan Matematika Dan Sains*, *4*(2), 62–70. https://doi.org/https://doi.org/10.26740/jppms.v4n2.p61-71

Ariestyan, Y., Sunardi, & Kurniati. (2016). Proses Berpikir Reflektif Siswa Dalam Menyelesaikan Soal Matematika Materi Sistem Persamaan Linear Dua Variabel. *KADIKMA:Jurnal Matematika Dan Pendidikan Matematika*, *7*(1), 94–104. https://doi.org/https://doi.org/10.19184/kdma.v7i1.5472

Badjeber, R., & Purwaningrum, J. P. (2018). Pengembangan Higher Order Thinking Skills Dalam Pembelajaran Matematika Di Smp. *Guru Tua : Jurnal Pendidikan Dan Pembelajaran*, *1*(1), 36–43. https://doi.org/10.31970/gurutua.v1i1.9

Fuady, A. (2017). Berfikir Reflektif Dalam Pembelajaran Matematika. *JIPMat*, *1*(2), 104–112. https://doi.org/10.26877/jipmat.v1i2.1236

Habibatul Izzah, K., & Azizah, M. (2019). Analisis Kemampuan Penalaran Siswa Dalam Pemecahan Masalah Matematika Siswa Kelas Iv. *Indonesian Journal Of Educational Research and Review*, *2*(2), 210. https://doi.org/10.23887/ijerr.v2i2.17629

Isnaen, N. S. F., & Budiarto, M. T. (2018). Profil Berpikir Reflektif Siswa Dalam Memecahkan Masalah Matematika Ditinjau Dari Adversity Quotient. *MATHEdunesa*, *7*(1), 68–73. https://jurnalmahasiswa.unesa.ac.id/index.php/3/article/view/22731

Kartikasari, L., & Kurniasari, I. (2021). Profil Berpikir Reflektif Siswa SMP dalam Menyelesaikan Soal PISA Ditinjau dari Kecemasan Matematika. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, *5*(3), 2878–2895. https://doi.org/10.31004/cendekia.v5i3.936

Kholid, M. N., Sadijah, C., Hidayanto, E., Permadi, H., & Firdareza, R. M. F. (2020). Pupils' Reflective Thinking in Solving Linear Equation System Problem. *Journal for the Mathematics Education and Teaching Practices*, *1*(1), 19–27. https://dergipark.org.tr/en/pub/jmetp/issue/55820/740132

Khumairoh, B., Amin, S. M., & Wijayanti, P. (2020). Penalaran Proporsional Siswa Kelas Menengah dalam Menyelesaikan Masalah Matematika Ditinjau dari Adversity Quotient. *Pedagogia : Jurnal Pendidikan*, *9*(1), 67–80. https://doi.org/10.21070/pedagogia.v

Kurniawati, L., Kusumah, Y. S., Sumarmo, U., & Sabandar, J. (2014). Enhancing students' mathematical intuitive-reflective thinking ability through problem-based learning with hypnoteaching method. *Journal of Education and Practice*, *5*(36), 130–135. https://www.iiste.org/Journals/index.php/JEP/article/view/17480

Lutfiananda, I. M. A., Mardiyana, & Saputro, D. R. S. (2016). Analisis Proses Berpikir Reflektif Siswa Dalam Memecahkan Masalah Matematika Non Rutin Di Kelas VIII Smp Islamic International School Pesantren Sabilil Muttaqien (IIS PSM) Magetan Ditinjau Dari Kemampuan Awal. *Jurnal Elektronik Pembelajaran Matematika*, *4*(9), 812–823. https://jurnal.fkip.uns.ac.id/index.php/s2math/article/view/9700/7135

Odiba, I. A., & Baba, P. A. (2013). Using reflective thinking skills for education quality improvement in Nigeria. *Journal of Education and Practice*, *4*(16), 196–202.

Raiyn, J., & Tilchin, O. (2015). Higher-Order Thinking Development through Adaptive Problem-based Learning. *Journal of Education and Training Studies*, *3*(4), 93–100. https://doi.org/10.11114/jets.v3i4.769

Rasyid, M. A., Budiarto, M. T., & Lukito, A. (2017). Profil Berpikir Reflektif Siswa SMP dalam Pemecahan Masalah Pecahan Ditinjau dari Perbedaan Gender. *Kreano, Jurnal Matematika Kreatif-Inovatif*, *8*(2), 171–181. https://doi.org/10.15294/kreano.v8i2.9849

Rhaudyatun, A. (2017). *Pengaruh Metode Cornell Note-Taking Terhadap Kemampuan Berpikir Reflektif Matematis Siswa*. https://repository.uinjkt.ac.id/dspace/handle/123456789/33824

Saraswati, P. M. S., & Agustika, G. N. S. (2020). Kemampuan Berpikir Tingkat Tinggi Dalam Menyelesaikan Soal HOTS Mata Pelajaran Matematika. *Jurnal Ilmiah Sekolah Dasar*, *4*(2), 257–269. https://doi.org/10.23887/jisd.v4i2.25336

Sari, C. K., Sutopo, S., & Aryuna, D. R. (2016). The Profile of Students' Thinking in Solving Mathematics Problems Based on Adversity Quotient. *JRAMathEdu (Journal of Research and Advances in Mathematics Education)*, *1*(1), 36–48. https://doi.org/10.23917/jramathedu.v1i1.1784

Stoltz, P. G. (2000). Adversity Quotoient, Mengubah hambatan menjadi peluang (diterjemahkan oleh t hermaya). *Jakarta: PT Gramedia Widiasarana Indonesia*.

Suhaji, I. P. (2020). Kemampuan Berpikir Reflektif Dalam Memecahkan Masalah Matematika Ditinjau Dari Gaya Kognitif. *Zeta - Math Journal*, *5*(1), 8–15. https://doi.org/10.31102/zeta.2020.5.1.8-15

Suharna, H. (2018). Teori berpikir reflektif dalam menyelesaikan masalah matematika. *Yogyakarta: Deepublish*.

Sutama. (2019). Metodologi Penelitian Pendidikan Kuantitatif, Kualitatif, PTK, Mix Methods, R & D. *Sukoharjo: CV Jasmine*, 114.

Swastika, A., Kholid, M. N., Nirmala, E., & Maharani, S. (2021). Pupils ' Reflective Thinking and Self - Efficacy Level for Problem Solving. *Turkish Journal of Computer and Mathematics Education*, *12*(6), 4628–4636. https://www.turcomat.org/index.php/turkbilmat/article/view/8448

Yoga, M. (2016). Adversity Quotient: Agar Anak Tak Gampang Menyerah. *Solo: Tinta Medina*.

Yuliatin, D. eko, & Ismail. (2019). Profil Berpikir Kritis Siswa SMP dalam Menyelesaikan masalah Matematika Model PISA ditinjau dari Adversity Quotient. *Jurnal Ilmiah Pendidikan Matematika*, *8*(2), 251–259. https://jurnalmahasiswa.unesa.ac.id/index.php/3/article/view/28072