

MATHEMATICAL CONNECTION ABILITY VIEWED FROM THE ADVERSITY QUOTIENT IN THE REACT LEARNING MODEL

Nura Milla Husna^{1*}, Mulyono², Detalia Noriza Munahefi³

^{1*,2,3} Universitas Negeri Semarang, Semarang City, Indonesia
*Corresponding author. Sekaran Gunungpati, Semarang City, 50229, Indonesia.

E-mail: nurahusna30@students.unnes.ac.id^{1*}
mulyono.mat@mail.unnes.ac.id²
detalia@mail.unnes.ac.id³

Received 15 December 2025; Received in revised form 17 January 2026; Accepted 23 March 2026

ABSTRACT

This study aims to describe students' mathematical connection abilities in terms of adversity quotient types in the REACT learning model assisted by the Salatiga cultural ethnomathematics e-module. The research method uses a mixed method with an explanatory design. The population in this quantitative study was all VIII grade students of SMP N 10 Salatiga in the 2025/2025 academic year. The research sample was taken by cluster random sampling and obtained class VIII-H. The research subjects were taken based on the adversity quotient type using a purposive sampling technique in class VIII-H. The results of the study indicate that (1) adversity quotient has a positive effect on students' mathematical connection abilities, and (2) descriptions of mathematical connection abilities in terms of AQ in REACT learning assisted by the Salatiga cultural ethnomathematics e-module with a wordwall can be seen from each category of AQ types. Subjects with AQ climbers were able to fulfill three indicators of mathematical connections, namely 1) the connection between mathematics and real life, 2) the connection between mathematical materials, and 3) the connection between mathematics and other disciplines. Subjects with AQ campers were able to fulfill two indicators of mathematical connections, namely 1) the connection between mathematics and real life and 2) the connection between mathematical materials. Meanwhile, subjects with AQ quitters were only able to fulfill one indicator, namely 1) the connection between mathematics and real life.

Keywords: adversity quotient; ethnomathematics, mathematical connection ability; REACT

ABSTRAK

Penelitian ini bertujuan untuk mendeksripsikan kemampuan koneksi matematis peserta didik ditinjau dari tipe adversity quotient pada model pembelajaran REACT berbantuan e-modul etnomatematika budaya Salatiga. Metode penelitian menggunakan mixed method dengan desain explanatory design. Populasi pada penelitian kuantitatif adalah seluruh kelas VIII SMP N 10 Salatiga tahun ajaran 2025/2025. Sampel penelitian diambil dengan cluster random sampling dan diperoleh kelas VIII-H. Subjek penelitian diambil berdasarkan tipe adversity quotient menggunakan teknik purposive sampling pada kelas VIII-H. Hasil penelitian menunjukkan bahwa (1) adversity quotient berpengaruh positif terhadap kemampuan koneksi matematis peserta didik, dan (2) deskripsi kemampuan koneksi matematis ditinjau dari AQ pada pembelajaran REACT berbantuan e-modul etnomatematika budaya Salatiga dengan wordwall dapat dilihat dari masing-masing kategori tipe AQ. Subjek dengan AQ climber mampu memenuhi ketiga indikator koneksi matematis yaitu 1) kaitan matematika dengan kehidupan sehari-hari, 2) kaitan antar materi matematika, dan 3) kaitan matematika dengan disiplin ilmu lain. Subjek dengan AQ campers mampu memenuhi dua indikator koneksi matematis 1) kaitan matematika dengan kehidupan sehari-hari dan 2) kaitan antar materi matematika. Sedangkan pada subjek dengan AQ quitter hanya mampu memenuhi satu indikator saja yaitu 1) kaitan matematika dengan kehidupan sehari-hari.

Kata kunci: adversity quotient; etnomatematika, kemampuan koneksi matematis; REACT



This is an open access article under the [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/)

Introduction

Regarding the objectives of mathematics education, the content standards of the National Council of Teachers of Mathematics (NCTM, 2000) outline the goals of mathematics education, which include developing ability such as problem-solving, communication, making connections, reasoning, and representation. Mastery of problem-solving ability is inseparable from students' mathematical connection ability because mathematical connections emerge when students solve specific tasks and can identify them in their written work or in the oral arguments or models they develop (Rodríguez-Nieto et al., 2023). Meanwhile, one important aspect that can influence students in solving mathematical problems is their resilience in the face of difficulty, also known as the adversity quotient (Mustika & Hakim, 2018). This statement is consistent with research conducted by Huda and Damar (2021) indicating that interviews with mathematics teachers at SMP Negeri 4 Cikarang Selatan who teach seventh-grade mathematics revealed that 63% of students consistently feel anxious and tense during mathematics lessons. Some students also feel that they lack strengths in mathematics, feel anxious when facing tests, often worry when it is their turn to come to the front of the class, and tend to give up easily when faced with difficult problems. Preliminary data from these interviews indicate that some students still "struggle to understand their own intelligence" when solving mathematical problems—a concept known in English as a low adversity quotient. This study was conducted to investigate students' mathematical connection ability as reflected in their respective types of Adversity Quotient through the selected REACT learning model, supported by ethnomathematics.

Students need the ability to establish connections between the stages of problem-solving in order to find solutions to problems. This aligns with the research by Maphutha et al., (2023) which found that students with strong mathematical connection ability successfully solved math problems, whereas those with weak mathematical connection ability failed to solve them. Through mathematical connections, students can develop conceptual understanding to reinforce interrelated mathematical concepts and solve existing problems. Without mathematical connections, students must learn and memorize too many separate mathematical concepts and procedures.

Students' ability to make connections between topics in mathematics, link mathematics to other sciences, and relate it to everyday life is referred to as mathematical connection ability (Pambudi in Rafiepour and Faramarzpour 2023). Some people say that mathematics is an integrated science, but in reality, students still have difficulty connecting the material they have learned (Rafiepour & Faramarzpour, 2023). Research by Prasetyo et al., (2019) indicates that students' low mathematical connection ability may stem from their confusion in applying mathematical concepts to solve problems involving connections between mathematical concepts. Additionally, the study by Muliana et al., (2022) states that low mathematical connection ability are due to some students still being unable to apply previously learned concepts, leading to confusion in selecting which concept to use to solve problems. Research by A'dadiyyah and Malasari (2023) also indicates that students' mathematical connection ability are considered insufficient because, when working on problems, they are unable to link current material with material previously studied.

In this regard, teachers, as those responsible for teaching and learning activities, must be able to select appropriate instructional models and learning media. Teachers must choose instructional models that align with the characteristics of the students and the subject matter being taught (Sarnoto et al., 2023). The results of the researcher's interviews with teachers regarding the learning process also indicate that mathematics instruction in the classroom more frequently employs guided inquiry or conventional (lecture-based) learning strategies. According to Hamruni in Yasmansyah & Sesmiarni (2022), the application of the guided inquiry model makes it difficult to control student activities and success, and it is not easy to plan lessons because it clashes with student habits; furthermore, its implementation requires a significant amount of time, making it difficult for teachers to align with the allotted schedule.

One of learning model that can be used is the REACT (Relating, Experiencing, Applying, Cooperating, Transferring) model, supported by an e-module on the cultural ethnomathematics of Salatiga using Wordwall. In this context, the ethnomathematics component integrates the culture of the city of Salatiga into an e-module. REACT is a contextual learning model developed by Michael L. Crawford in the United States, which is an extension of the previous CTL (Contextual Teaching and Learning) model. REACT is designed so that students can connect learning materials to real life by experiencing, applying, collaborating, and transferring acquired knowledge to solve problems in daily life (Fendrik et al., 2018). According to them, the REACT strategy actively involves students in learning; it is hoped that learning will be more enjoyable for students, more meaningful, and lead to a deeper understanding of the concepts being studied, with students' retention of these concepts lasting longer. A deeper understanding and longer retention of a concept can make it easier for students to solve problems related to mathematics itself as well as those related to other fields.

Eventually, the REACT model was expanded to include cultural elements known as ethnomathematics. Mathematics that develops within a community is called ethnomathematics (Juano & Jediut, 2019). Ethnomathematics aims to help students manage, understand, and relate mathematical topics and concepts, as well as apply them directly to solving mathematical problems both in school and at home (Lisnani et al., 2022). Ethnomathematics can be utilized in learning to help students more easily understand the learning material when it is linked to local culture, thereby making students more familiar with mathematics and its applications in daily life (Pratiwi et al., 2022).

Stoltz (2000) states that adversity quotient (AQ) is the perseverance in overcoming obstacles on the path to achieving desired success. As noted by Zhao et al., (2022), adversity quotient also helps individuals strengthen their abilities and perseverance in facing everyday challenges. This is supported by Mafulah and Amin (2020), who found that students' adversity quotients differ when solving mathematical problems, particularly those involving mathematical connections; thus, if there are differences in adversity quotients among students, this will inevitably lead to differences in their mathematical connection abilities as well. Based on this description, the researcher aims to analyze students' mathematical connection abilities based on adversity quotient within the REACT learning model.

Research Methods

The research method used by the researcher is mixed methods. A mixed methods research design is a procedure for collecting, analyzing, and “combining” quantitative and qualitative methods in a single study or a series of studies to understand the research problem (Creswell and Clark, 2017). The mixed-methods model used is the sequential explanatory design, which is a research design that combines quantitative and qualitative research by collecting and analyzing quantitative data in the first phase, analyzing the results, and then using those results to plan the second stage—the qualitative stage. Qualitative results generally inform the selection of participants and the types of questions to be asked (Creswell, 2016). Munahefi et al., (2020) also note that the sequential explanatory design begins with quantitative data collection, which provides an overview of the research problem, followed by qualitative data collection to help explain or clarify complex quantitative results. The sequential explanatory design diagram can be seen in Figure 1. The quantitative research here is used to analyze how students’ mathematical connection abilities are developed in REACT learning supported by the Salatiga cultural ethnomathematics e-module using WordWall. Meanwhile, the qualitative research in this study is used to describe students’ mathematical connection abilities in terms of their adversity quotient in REACT supported by the Salatiga cultural ethnomathematics e-module with Wordwall in Figure 1.

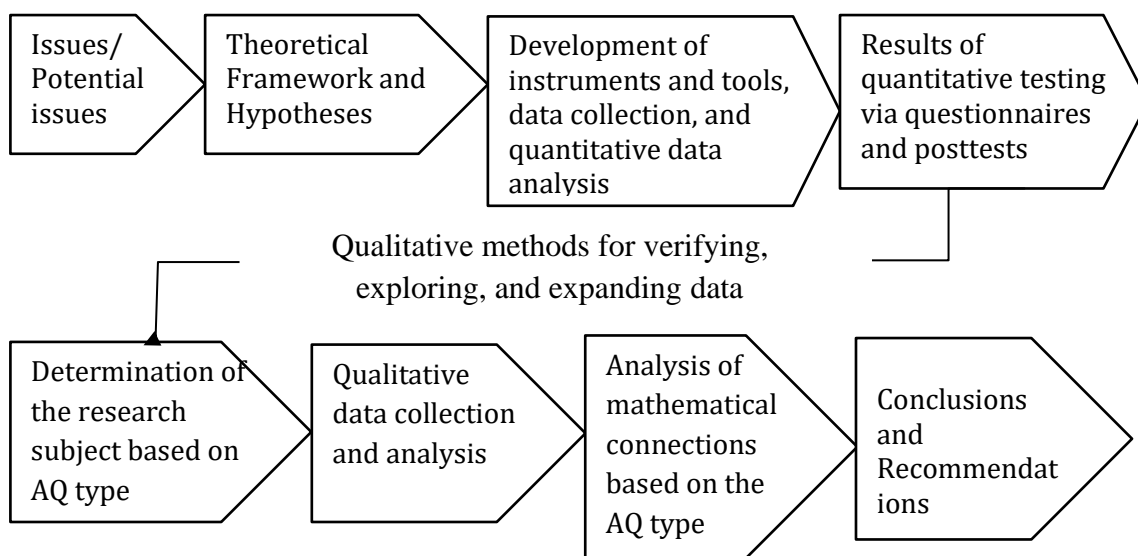


Figure 1. *Sequential Explanatory Design*

The population of this study consists of eighth-grade students at SMP Negeri 10 Salatiga for the 2024/2025 academic year. There are eight eighth-grade classes at SMP Negeri 10 Salatiga: VIII-A, VIII-B, VIII-C, through VIII-H. The sample for this study consists of two classes selected at random using the cluster random sampling technique. This technique was used because the students who were the subjects of the study were in the same grade level, used the same learning resources (textbooks), received material based on the same curriculum, and class assignments were not based on ranking. Qualitative data in the study were collected using purposive sampling, which involves selecting subjects based on specific criteria. The research subjects consisted of 6 students; based on these considerations, two

subjects with a climber-type adversity quotient, two subjects with a camper-type adversity quotient, and two subjects with a quitter-type adversity quotient were selected.

The data collection methods used to analyze students' mathematical connection ability were: (1) observation, (2) scales, (3) tests, and (4) interviews. The data obtained consisted of students' mathematical connection skill scores and Adversity Quotient scale results.

Results and Discussion

The study utilized an adversity quotient scale completed by 32 eighth-grade students in Class VIII-H at SMP N 10 Salatiga, a class in which the REACT learning model—supported by e-modules on Salatiga's cultural ethnomathematics—was implemented. The adversity quotient scale was used to select students based on their adversity quotient type. Based on the scale, the students can be categorized into the climber, camper, and quitter adversity quotient groups.

During the implementation of the experimental class, the teacher successfully conducted the lesson in accordance with the steps outlined in the REACT curriculum, utilizing the Salatiga cultural ethnomathematics e-module and WordWall. First, the “relating” stage helps students connect the lesson material to their local culture and everyday problems. It's not just about ethnomathematics; in fact, learning at this stage isn't always about ethnomathematics but can relate to daily life, such as calculating the speed of passing vehicles. Second, in the “experiencing” stage, the teacher provides practice problems, and students actively search for, discover, and explore the concepts being studied, namely SPLDV. Students can model problems into mathematical forms, calculate the prices of various types of Salatiga's traditional foods using SPLDV material, and apply SPLDV to solve problems related to mathematics itself or in other fields. The third stage is “applying.” In this stage, students can apply their prior experiences to problem-solving and the assimilation of new concepts. The teacher provides problems related to the local culture, mathematical concepts other than SPLDV, and problems related to other academic disciplines. Next, the fourth stage is cooperating. In this stage, students are seen to be active and enthusiastic in exchanging ideas with their group members.

This involves a deep understanding of how students with different adversity quotient types solve mathematical problems and relate mathematics to daily life, connect mathematics to other topics within mathematics, and link mathematics to other disciplines. This is in line with Akbar et al., (2023) who found that students' success in facing and solving a problem can be seen from a high adversity quotient. The results of the study by Dewi and Wutsqa (2024) explain that the categories within the adversity quotient (climbers, campers, quitters) determine how students face and solve mathematical problems; that is, the higher the adversity quotient category, the higher the students' ability in mathematics learning. This study obtained results from the adversity quotient scale, which revealed variations in adversity quotient types among students in the experimental class when solving the given mathematical problems.

Influence Test (Regression)

The first test to be conducted is the influence test and use the regression test. This test is used to determine whether the adversity quotient influences students' mathematical connections in Table 1.

Table 1. Linearity Test Table

		Sum of Squares	df	Mean Square	F	Sig.
Mathematical Connection * Adversity Quotient	Between Groups	3068.469	22	139.476	6.123	.004
	(Combined)					
	Linearity	1989.672	1	1989.672	87.351	.000
	Deviation from Linearity	1078.797	21	51.371	2.255	.104
Within Groups		205.000	9	22.778		
Total		3273.469	31			

Based on Table 1, regarding the deviation from linearity, the Sig. value is $Sig. = 0,104 \geq 0,05$; therefore, H_0 is accepted, indicating that the regression model between students' adversity quotient and mathematical connection ability is linear. Therefore, there is a linear relationship between students' adversity quotient and mathematical connection ability. Since the linearity test was met, the regression coefficient test can proceed in Table 2.

Table 2. Coefficients Table

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	41.414	6.383		6.488	.000
	Adversity Quotient	.341	.050	.780	6.819	.000

Based on the SPSS output in Table 2, the results of the linear regression test (coefficients) show a Sig. value of $0,000 < 0,05$. Therefore, H_0 is rejected, indicating that students' adversity quotient influences their mathematical connection ability. Since b is positive, it can be concluded that students' adversity quotient has a positive effect on their mathematical connection ability.

Subject Classification Based on Adversity Quotient Type

Subject classification based on AQ is divided into three categories: climbers, campers, and quitters. Participants were grouped according to their AQ before and during the learning process. The data used for this classification were derived from the AQ questionnaire results. The subject groupings and student percentages based on the AQ questionnaire are shown in Table 3.

Table 3. Table of Student Percentages Based on Adversity Quotient

No.	Type of Adversity Quotient	Sum of Students	Persentase
1.	<i>Climber</i>	10	31,25%
2.	<i>Camper</i>	20	62,5%
3.	<i>Quitter</i>	2	6,25%

Total	32	100%
--------------	-----------	-------------

Based on the grouping of subjects from the AQ questionnaire results, two subjects from each category were selected for interviews regarding students' mathematical connection ability. The purpose of this was to clarify the relationship between AQ and students' mathematical connection ability.

Next, two students classified as "climbers," two as "campers," and two as "quitters" were selected to assess their mathematical connection ability. The author analyzed mathematical connection ability in relation to the adversity quotient types—climber, camper, and quitter—to explore the relationship between adversity quotient types and students' mathematical connection ability.

Based on the standards for the mathematics learning process, one of the key areas of focus is mathematical connection skills, as these skills encompass several indicators that students must master. These include the ability to identify relationships between mathematical concepts, connect mathematical concepts to other fields of study, and apply mathematics in everyday life (Bakhril, 2019). Therefore, this study will utilize these three indicators. The following outlines students' mathematical connection skills based on types of adversity quotient.

Mathematical Connection Ability of Students in the Climber Type of the Adversity Quotient Category

In the data reduction phase, the results of the mathematical connection tests and interviews with the selected research subjects, namely A-10 and A-27, were organized using simple language. After reducing the data, the next step was to present the students' mathematical connection test data, adjusted according to the mathematical connection indicators for students, as viewed through the adversity quotient of the "climber" type. Table 4 below presents the mathematical connection test data as viewed through the adversity quotient of the "climber" type in Table 4.

Table 4. Mathematical Connection Ability of the Climber Type

Mathematical Connection Indicators	Adversity Quotient of the Climber Type	
	A-10	A-27
The connection between mathematics and everyday life	Students are able to understand the problems in the questions and effectively apply SPLDV concepts in their daily lives	Students are able to understand the problems in the questions and effectively apply SPLDV concepts in their daily lives
The connection between material in one topic and material in another topic	Students are able to understand the problems well and apply the SPLDV material to geometry.	Students are able to understand the problems well and apply the SPLDV material to geometry.
The connection between the subject matter and other academic disciplines	Students are able to identify problems and understand that mathematical concepts can be applied in subjects other than mathematics	Students are able to identify problems and understand that mathematical concepts can be applied in subjects other than mathematics

Mathematical Connection Ability of Students in the Camper Type of the Adversity Quotient Category

In the data reduction phase, the results of the mathematical connection tests and interviews with the selected research subjects—A-3 and A-30—were organized using simple language. After reducing the data, the next step was to present the students’ mathematical connection test results, aligned with the indicators of mathematical connection as assessed through the adversity quotient of students of the camper type. Table 5 below presents the mathematical connection test data in relation to the adversity quotient of the camper type in Table 5.

Table 5. Camper-Type Mathematical Connection Ability

Mathematical Connection Indicators	Adversity Quotient of the Camper Type	
	A-3	A-30
The connection between mathematics and everyday life	Students are able to understand the problems in the questions and apply SPLDV concepts effectively in their daily lives.	Students are able to understand the problems in the questions and apply SPLDV concepts effectively in their daily lives.
The connection between material in one topic and material in another topic	Students are able to understand the problems well and apply the SPLDV material to geometry.	Students are able to understand the problems well and apply the SPLDV material to geometry.
The connection between the subject matter and other academic disciplines	Students are able to understand the problems but fail to realize that mathematical concepts can be applied to subjects other than mathematics due to calculation errors.	Students are able to understand the problems but do not realize that mathematical concepts can be applied in subjects other than mathematics due to calculation errors.

Mathematical Connection Ability of Students in the Quitter Type of the Adversity Quotient Category

In the data reduction phase, the results of the mathematical connection tests and interviews with the selected research subjects, namely A-9 and A-19, were organized using simple language. After reducing the data, the next step was to present the students’ mathematical connection test data, adjusted according to the mathematical connection indicators for students classified as “quitters” based on their adversity quotient. Table 6 below presents the mathematical connection test data analyzed from the perspective of the adversity quotient for the “quitter” type in Table 6.

Table 6. Quitter-Type Mathematical Connection Ability

Mathematical Connection Indicators	Adversity Quotient Tipe Quitter	
	A-9	A-19
The connection between mathematics and everyday life	Students are able to understand the problems in the questions and apply SPLDV concepts effectively in their daily lives.	Students are able to understand the problems in the questions and apply SPLDV concepts effectively in their daily lives.
The connection between material in one topic and material in another topic	The students are able to understand the problems well but are not yet able to apply the SPLDV material to the geometry material because there is unfinished work.	Students were able to understand the problems well and apply the SPLDV material to the geometry problems, but there were calculation errors and the work was not completed.
The connection between the subject matter and other academic disciplines	Students are able to understand the problems but have not yet grasped that mathematical concepts can be applied to subjects other than mathematics, so the assignment remains unanswered.	Students are able to understand the problems but have not yet grasped that mathematical concepts can be applied to subjects other than mathematics, so the work is not yet complete.

In general, students with a “climber” adversity quotient demonstrate excellent mathematical connectivity ability. Consistent with this study, students with strong resilience in the face of problems or obstacles are able to master all three indicators of mathematical connectivity and solve problems effectively. Students with the camper type of adversity generally demonstrate good mathematical connections. However, the challenge faced by these students is a lack of attention to detail during the problem-solving process. Consistent with Sanidah and Sumartini (2022), who noted that one of the difficulties students face in solving SPLDV problems is a lack of focus or carelessness when reading the questions. This aligns with this study’s finding that camper-type students are careless in their calculations, resulting in their ability to meet only two indicators of mathematical connections: the connection between mathematical content and topics within mathematics, and the connection between mathematics and other disciplines. Students in the “quitter” adversity quotient category were only able to master one indicator: the connection between mathematics and daily life. Students with the “quitter” adversity quotient type were unable to master the indicators of the connection between mathematics and topics within mathematics, as well as the connection between mathematics and other disciplines. The challenge encountered regarding these indicators is that students have not yet fully understood the concepts, leading to difficulties in formulating strategies in

The first indicator of mathematical connections is the connection between mathematics and everyday life, meaning that students can understand and apply mathematical concepts to situations encountered in daily life. Students in the

climber, camper, and quitter adversity quotient categories did not have difficulty understanding the problems presented in the questions. In general, students copied the information in the questions by writing down what was known and what was asked. However, campers and quitters appeared to be careless, resulting in some information being omitted. Nevertheless, when asked again, they were able to accurately recall the information from the questions. In general, students categorized under the adversity quotient types—climber, camper, and quitter—did not struggle to apply mathematical concepts to everyday life. This was evident from their work, which demonstrated accurate calculations. This was further supported by interview results, where students were also able to provide additional examples of how SPLDV mathematics connects to daily life.

The second indicator of mathematical connection ability is the connection between mathematical concepts within the subject itself; that is, students are able to understand problems and apply concepts across different topics in mathematics. Students with a “climber” adversity quotient did not experience significant difficulties with this indicator. However, students with a “camper” adversity quotient appeared to struggle due to calculation errors. This may occur due to carelessness in reading and paying attention to the positive or negative signs on the numbers. Meanwhile, students of the “quitter” type face significant difficulties in applying mathematical concepts across topics because there are tasks that remain unfinished. In other words, students of the “quitter” type can understand a problem in a question but cannot apply another mathematical concept because they do not recall the formula.

The third indicator of mathematical connections—connections between mathematics and other fields of study—is that students are able to understand a problem and recognize that mathematical concepts can be linked to subjects other than mathematics. Students with a climber-type adversity quotient did not experience significant difficulty with this indicator. However, students of the camper type appeared to experience some difficulty due to minor calculation errors. Meanwhile, students of the quitter type appeared to experience significant difficulty with this indicator. It was evident that they were unable to connect mathematical concepts with other subjects, resulting in unanswered questions.

The greater a student’s resilience in facing obstacles, the better their mathematical connection ability become. Consequently, students classified as “climbers” demonstrated superior mathematical connection ability compared to those classified as “quitters.” Overall, students with the “climber” type demonstrate resilience in thinking, clarity in understanding problems, and precision in solving mathematical connection test questions from start to finish. This aligns with the research by Fauziah et al., (2020) which states that unlike ‘quitters’ and “campers,” “climber” students are characterized by their persistent efforts to thoroughly solve problems. Meanwhile, camper-type students actually understand that connections exist in mathematics but tend to stop before further developing the problem. Other research also reveals that camper-type students actually possess adequate ability to solve problems; however, because they have high self-confidence and tend to feel satisfied with the results they have achieved (Supono et al., 2024). Meanwhile, the “quitter” type tends to give up easily when facing obstacles from the start and fails to meet the indicators of mathematical connection ability in other areas and across

topics within mathematics. This further reinforces the characteristic of the “quitter” type according to Stoltz in Dinatingtyas et al., (2025) who states that.

Based on the above discussion, in general, students’ adversity quotient can influence their mathematical connection ability. Students with a “climber” adversity quotient demonstrated the best performance because they were able to meet all indicators of mathematical connection. Meanwhile, students with a “camper” adversity quotient can only master two indicators of mathematical connections: the connection between mathematics and daily life, and the connection between mathematics and topics within mathematics. On the other hand, students with a “quitter” adversity quotient can only meet one indicator of mathematical connections: the connection between mathematics and daily life.

Conclusion and Suggestion

Based on the research conducted, it was concluded that students’ mathematical connection abilities, as assessed by the adversity quotient, yielded varying results. Subjects classified as “climbers” met all three indicators of mathematical connection, which include connections between mathematics and everyday life, connections between material within a specific topic and material in other topics, and connections between the material and other academic disciplines. Subjects with the camper type met only two indicators of mathematical connection, namely connections between material in a specific topic and material in other topics, and connections between the material and other disciplines. Subjects with the “quitter” type met only one indicator of mathematical connection, which includes connections to mathematics in daily life, connections between material in a specific topic and material in other topics, and connections between material and other disciplines. This may occur because the better a student’s resilience in facing an obstacle, the better their mathematical connection skills become.

Based on this study, teachers should use the adversity quotient as a guideline in teaching so that when presenting challenge questions, they can tailor them to their students’ mathematical connection skills. Teachers can enhance students’ mathematical connection skills by regularly training them to solve problems (Agustiani, 2020). “Climber” types should frequently be given additional challenges to strengthen their mathematical connection skills. The “camper” type should always be encouraged to maintain their enthusiasm for learning and to observe the mathematical connection skills of the ‘climber’ type to help them quickly become proficient in mastering the indicators of mathematical connection. Meanwhile, the “quitter” type should continue to receive guidance and more detailed explanations so that their ability to master the indicators of mathematical connection can improve.

Reference

- A’dadiyyah, N. L., & Malasari, P. N. (2023). Implementasi Model REACT (Relating, Experiencing, Applying, Cooperating Transferring) Berbasis Etnomatematika Menara Kudus untuk Meningkatkan Kemampuan Koneksi Matematis Siswa SMP. *National Conference Of Islamic Natural Science*, 03, 392–405. <https://proceeding.uinsuku.ac.id/index.php/NCOINS/article/view/675>
- Agustiani, S. (2020). Analisis Kemampuan Koneksi Matematis Ditinjau dari

- Lingkungan Keluarga Siswa SMP Negeri 2 Toari. *EMTEKA: Jurnal Pendidikan Matematika*, 1(2), 112–126. <https://scholar.ummetro.ac.id/index.php/emteka/article/view/591/318>
- Akbar, S., Putri, Y. K., & Rizdanti, S. (2023). Analysis of Factors Affecting Students' Adversity Quotient on Completing Undergraduate Thesis. *International Journal of Research in Education and Science*, 9(1), 124–133. <https://doi.org/10.46328/ijres.3011>
- Bakhril, M. S. (2019). Kemampuan Koneksi Matematis Siswa Melalui Model Pembelajaran Peer Tutoring Cooperative Learning. *PRISMA: Prosiding Seminar Nasional Matematika*, 2, 754–758. <https://journal.unnes.ac.id/sju/prisma/article/view/29263>
- Creswell, J. (2016). *Research Design.: Qualitative, Quantitative, Mixed Methods Approaches*. University Of Nebraska-Lincoln.
- Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research*. Sage publications.
- Dewi, F. C., & Wutsqa, D. U. (2024). A Literature Review Regarding the Position of Adversity Quotient in Mathematics Learning. *International Journal of Multicultural And*, 11(8), 630–640. <http://dx.doi.org/10.18415/ijmmu.v7i1.1413>
- Diningtyas, G. W., Rahmatina, D., Azmi, R. D., & Riau, U. (2025). Soal Kontekstual Berorientasi Higher Order Thinking Skills Ditinjau Dari Adversity. 6(1), 54–63.
- Fauziah, M., Marmoah, S., Murwaningsih, T., & Saddhono, K. (2020). The effect of thinking actively in a social context and creative problem-solving learning models on divergent-thinking skills viewed from adversity quotient. *European Journal of Educational Research*, 9(2), 537–568. <https://doi.org/10.12973/eu-jer.9.2.537>
- Fendrik, M., Alpusari, M., Yosi, A., & Widyanthi, A. (2018). The Enhancement of Primary Students' Mathematical Connections and Habits of Mind Abilities Using REACT Strategy. *Proceedings of the UR International Conference on Educational Sciences, October 2018*. https://www.researchgate.net/profile/Muhammad-Fendrik/publication/373771380_The_Enhancement_of_Primary_Students'_Mathematical_Connections_and_Habits_of_Mind_Abilities_Using_REACT_Strategy
- Huda, N., & Damar, D. (2021). Asosiasi Adversity Quotient dengan Hasil Belajar Matematika Peserta Didik Jenjang SMP. *Journal of Instructional Mathematics*, 2, 10–20. <https://doi.org/10.37640/jim.v2i1.892>
- Juano, A., & Jediut, M. (2019). Ethnomatematics and Its' Relationship with The Concepts of Geometry at Elementary School Mathematics Based on Manggaraian Culture. *International Journal of Science and Research (IJSR)*, 8(1), 1707–1713. <https://www.ijsr.net/archive/v8i1/ART20194645.pdf>
- Lisnani, Putri, R. I. I., Zulkardi, Z., & Somakim, S. (2022). Studi Etnomatematika: Rumah Limas Di Museum Negeri Sumatera Selatan Balaputera Dewa. *Teorema: Teori Dan Riset Matematika*, 7(2), 351–364. <https://jurnal.unigal.ac.id/teorema/article/view/7585>
- Mafulah, J., & Amin, S. M. (2020). Kemampuan Koneksi Matematis Siswa Dalam Memecahkan Masalah Matematika Ditinjau Dari Adversity Quotient. *MATHEdunesa*, 9(2), 241–250. <https://doi.org/10.26740/mathedunesa.v9n2.p241-250>

- Maphutha, K., Maoto, S., & Mutodi, P. (2023). Exploring Grade 11 Learners' Mathematical Connections When Solving Two-Dimensional Trigonometric Problems In An Activity-Based Learning Environment. *Journal on Mathematics Education, 14*(2), 293–310. <https://doi.org/10.22342/jme.v14i2.pp293-310>
- Muliana, M., Azura, C., & Rohantizani, R. (2022). Penerapan Model Pembelajaran Problem Based Learning Untuk Meningkatkan Kemampuan Koneksi Matematis Siswa. *Jurnal Dedikasi Pendidikan, 6*(2), 503–514. <https://doi.org/10.30601/dedikasi.v6i2.3084>
- Munahefi, D. N., Kartono, Waluya, B., & Dwijanto. (2020). Analysis of Creative Thinking Process Based on Metacognitive with Project Work Models. *Atlantis Press: International Conference on Science and Education and Technology, 443*(Iset 2019), 180–185. <https://doi.org/10.2991/assehr.k.200620.035>
- Mustika, R., & Hakim, L. El. (2018). Hubungan Self Confidence dan Adversity Quotient Terhadap Kemampuan Pemecahan Masalah Matematik Siswa Correlation of Self Confidence and Adversity Quotient Against Students ' Mathematical Problem Solving Ability. *Jurnal Penelitian Pendidikan, 2008*. <https://ejournal.upi.edu/index.php/JER/article/view/12964>
- Prasetyo, K. B., Sukestiyarno, Y. L., & Cahyono, A. N. (2019). Analisis Kemampuan Koneksi Matematis Ditinjau dari Self- Efficacy Siswa Kelas VII Pokok Bahasan Geometri. *PROSNAMPAS (Prosiding Seminar Nasional Pascasarjana), 2*(1), 975–980. <https://proceedings.unnes.ac.id/snpasca/article/view/401>
- Pratiwi, K. R., Nurmaina, M., & Aridho, F. F. (2022). Penerapan Etnomatematika dalam Pembelajaran Matematika pada Jenjang Sekolah Dasar. *Himpunan: Jurnal Ilmiah Mahasiswa Pendidikan Matematika, 2*(80), 99–105. <http://jim.unindra.ac.id/index.php/himpunan/article/view/3810>
- Rafiepour, A., & Faramarzpour, N. (2023). Investigation Of The Mathematical Connection's Ability Of 9th Grade Students. *Journal on Mathematics Education, 14*(2), 339–352. <https://doi.org/10.22342/jme.v14i2.pp339-352>
- Rodríguez-Nieto, C. A., Cervantes-Barraza, J. A., & Moll, V. F. (2023). Exploring Mathematical Connections In The Context Of Proof And Mathematical Argumentation: A New Proposal Of Networking Of Theories. *Eurasia Journal of Mathematics, Science and Technology Education, 19*(5). <https://doi.org/10.29333/ejmste/13157>
- Sanidah, S., & Sumartini, T. S. (2022). Kesulitan Siswa Kelas VIII Dalam Menyelesaikan Soal Cerita Spldv Dengan Menggunakan Langkah Polya Di Desa Cihikeu Pendahuluan. *01*(01), 15–26. <https://pdfs.semanticscholar.org/3693/f5cb01b84b5074943023bd803d08fb056c26.pdf>
- Sarnoto, A. Z., Rahmawati, S. T., Ulimaz, A., & Mahendika, D. (2023). Analisis Pengaruh Model Pembelajaran Student Center Learning terhadap Hasil Belajar : Studi Literatur Review. *Jurnal Pendidikan Dan Kewirausahaan, 11*(2), 615–628. <https://pdfs.semanticscholar.org/a44e/65fec3fc7f488c3ac7617b602605f6d8c3b9.pdf>
- Stoltz, P. G. (2000). Adversity quotient. *Jakarta: Grasindo*.
- Supono, L., Agoestanto, A., & Wijayanti, K. (2024). Mathematical Connections of Students Viewed From Adversity Quotient in Problem-Based Learning Using

- Math City Map. *AlphaMath: Journal of Mathematics Education*, 10(1), 74.
<https://doi.org/10.30595/alphamath.v10i1.21662>
- Zhao, Y., Sang, B., & Ding, C. (2022). The Roles Of Emotional Intelligence And Adversity Quotient In Life Satisfaction. *Current Psychology*, 41(12), 9063–9072.
<https://link.springer.com/article/10.1007/s12144-021-01398>