The Effect of Adversity Quotient (AQ) on Natural Science Learning Outcomes in Elementary School Students

Savitri Suryandari [1]✉, Leni Yuliana[1]
(1) Prodi PGSD, Universitas Wijaya Kusuma Surabaya, Indonesia

✉ Corresponding author
(savitrisuryandari.uwks@gmail.com)

Abstrak

Studi ini menguji apakah Adversity Quotient (AQ) berpengaruh signifikan atau tidak signifikan terhadap hasil belajar Sains alam siswa sekolah dasar. Adversity quotient adalah kemampuan seseorang dalam mengamati kesulitan dan memproses/menyelesaikannya dengan kecerdasannya. Pendekatan yang digunakan dalam penelitian ini adalah pendekatan eksperimen yang bertujuan untuk membuktikan pengaruh Adversity Quotient (AQ) terhadap hasil belajar Sains alam anak-anak sekolah dasar. Hasil penelitian menunjukkan bahwa hipotesis penelitian (H1) diterima, atau Ho ditolak. Karena nilai F Count = 2.049 > nilai F Tabel = 4.28 maka Ha diterima sementara Ho ditolak. Ini berarti: Adversity Quotient (X_2) memiliki pengaruh yang signifikan terhadap Hasil Belajar (Y). Dengan demikian, dapat disimpulkan bahwa terdapat pengaruh positif dan signifikan antara Adversity Quotient (X_2) terhadap hasil belajar siswa.

Kata Kunci: *Adversity Quotient*, *Siswa SD*, *Ilmu Alam*, *Hasil belajar*

Abstract

This current study examines whether Adversity Quotient (AQ) significantly or insignificantly affects elementary school students' Natural Science learning outcomes. Adversity quotient is a person's ability to observe difficulties and process/resolve them with their intelligence. The approach used in this study is an experimental approach which aims to prove the effect of Adversity Quotient (AQ) on Natural Science learning outcomes of elementary school students. The results show that the research hypothesis (H1) is accepted, or Ho is rejected. Because the value of F Count = 2.049 > value of F Table = 4.28 then Ha is accepted while Ho is rejected. This means: Adversity Quotient (X_2) has a significant influence on Learning Outcomes (Y). So, it can be concluded that there is a positive and significant influence between Adversity Quotient (X_2) on student learning outcomes

Keyword: *Adversity Quotient*, *Elementary school students*, *Natural Science*, *Learning Outcome*

INTRODUCTION

Recently, many people think that to excel in learning, a person must have a high Intelligence Quotient (IQ). In fact, many students cannot achieve good scores despite having high intelligence abilities, or vice versa. That is why the level of intelligence is not the only factor that determines one's success. According to Golmen (2005), intellectual intelligence (IQ) only contributes 20% to success in life, while the other 80% is contributed by other factors which include emotional intelligence (e.g., the ability to motivate oneself, overcome frustration, control impulses, regulate moods, empathy, and the ability to cooperate) Afri, 2018. Various studies have found that social and emotional skills play an increasingly important role in life for achieving personal and professional success than intellectual abilities (Gusta, et all. 2022).

With emotional intelligence, a person is able to know and well-respond to their feelings so that they are most likely to succeed in life because they have the motivation to achieve. Natural

science is one of the subjects taught at all levels of education, which is related to natural objects. Natural science is theoretical knowledge that is obtained or compiled in a unique or special way, namely by observing, experimenting, concluding, formulating theories, experimenting, and observing (Mantue, et. All, 2021). According to the 2013 curriculum, learning activities of Science subject at elementary school are directed at empowering all students' potential to achieve the expected competencies (Agustina and Suniasih, 2021). Based on this curriculum, students need to have good physical endurance when encountering problems during science learning. In this context, physical endurance is needed when learning. Therefore, this current study examines whether Adversity Quotient (AQ) significantly or insignificantly affects elementary school students' Natural Science learning outcomes.

"Adversity" means misery and misfortune, while "quotient" is defined as ability or intelligence. According to Stoltz (2000), adversity quotient is a person's ability to observe difficulties and process/resolve them with their intelligence. He further explained that this concept can be realized in three forms, namely: 1) as a new conceptual framework to understand and improve all aspects of success; 2) As a measure of how a person responds to misfortune; and 3) As a tool to improve one's response to adversity. In other words, adversity quotient is an ability to survive in facing problems or difficulties in life.

Adversity Quotient (AQ) is a term invented by Paul G. Stoltz. According to Stoltz (2000), AQ is a new conceptual framework for understanding and enhancing all aspects of success. AQ is a measure to find out the response to adversity. AQ is a scientifically based set of tools for improving one's response to adversity. Stoltz (2000) says that a person's success is not only determined by intellectual intelligence (IQ) and emotional intelligence (EQ) but also other factors. One of them is Adversity Quotient (AQ). AQ is an ability used intelligently to find a solution to a problem or difficulty being faced.

This current study titled "The Effect of Adversity Quotient (AQ) on Natural Science Learning Outcomes in Elementary School Students" aims to investigate the impact of AQ on science learning outcomes. However, there are several research gaps when compared to previous studies: *Lack of focus on specific academic subjects:* While the current study examines the impact of AQ on Natural Science learning outcomes, previous studies, such as Afri (2018), have explored the relationship between AQ and problem-solving abilities in mathematics. Therefore, there needs to be more research investigating the influence of AQ on specific subject areas within the academic context. *Lack of focus on career adaptability:* Hardianto and Sucihayati (2019) investigated the relationship between AQ and career adaptability in a specific professional setting. In contrast, the current study focuses on academic outcomes in elementary school students. Therefore, a research gap exists in exploring the connection between AQ, career adaptability, and academic performance in a broader educational context. *Different academic subjects:* The current study focuses on the impact of AQ on Natural Science learning outcomes in elementary school students, while the previous study by Hidayat and Sariningsih (2018) examines the relationship between AQ and mathematical problem-solving ability in junior high school students. Therefore, there is a research gap in investigating the influence of AQ on specific academic subjects, such as mathematics and Natural Science, across different grade levels. Based on the gaps, the focus of this current research is examining whether Adversity Quotient (AQ) significantly or insignificantly affects elementary school students' Natural Science learning outcomes.

Aspects of Adversity Quotient

According to Stoltz (2000) , the adversity quotient comprises four dimensions: control, origin and ownership, reach, and endurance. Control refers to a person's ability to manage and position themselves in an event, particularly in terms of problem-solving. The responses of individuals with low and high AQ differ significantly. Individuals with low AQ exhibit low self-control, often giving up easily and reaching a saturation point. Conversely, those with high AQ have greater control, maintaining optimism and perseverance, refusing to give up (Hardianto and Sucihayati, 2019).

Origin and ownership involve how individuals perceive their role in mistakes or problems. Those with low AQ tend to feel guilty for mistakes they may not necessarily be responsible for, attributing themselves as the cause or source of the problem. On the other hand, individuals with

high AQ do not blame others for problems and take responsibility for improving and finding solutions. Reach examines the extent to which difficulties impact one's life. Individuals with low AQ magnify problems across various aspects of their lives, perceiving negative events as disasters that disrupt their happiness and peace of mind. Conversely, individuals with a higher AQ limit the scope of their problems to the specific events they face. By focusing on specific difficulties or problems, they can effectively cope and manage challenges, making them easier to handle.

Endurance addresses the duration of difficulties and the persistence of their causes. Those with low AQ tend to perceive problems and their causes as long-lasting events, leading to feelings of helplessness, cynicism, and the belief that problems are permanent. Conversely, individuals with high AQ view problems as temporary obstacles, understanding that success is a permanent outcome. They cultivate positive energy, maintain high levels of optimism, and approach challenges with resilience.

Factors and Characters that make up the Adversity Quotient

Several factors contribute to the adversity quotient and shape one's character. According to Stoltz (2000), these factors are as follows:

a) Competitiveness: Individuals with a high AQ inadequately respond to problems and tend to be pessimistic and passive. On the contrary, those with a high AQ react more agilely, maintaining positive energy and focus to succeed in competitive situations.
b) Creativity: Creativity is a crucial aspect of the adversity quotient, requiring innovative approaches to problem-solving. As Joel Barker stated in Stoltz (2000), "creativity also arises from despair (Safi'I et all, 2021). Therefore, creativity necessitates the ability to overcome difficulties and solve problems caused by uncertain circumstances.
c) Motivation: Individuals with high motivation can identify opportunities within existing difficulties or problems. In other words, individuals with strong motivation will make use of their abilities to solve problems effectively.
d) Taking Risks: Individuals with a high AQ demonstrate more courage in taking risks and pursuing actions or treatments. Conversely, those with a low AQ tend to be hesitant or reluctant to take risks.
e) Perseverance: Perseverance refers to the ability to persistently pursue a goal despite challenges. Those who consistently persevere are more likely to respond well to adversity.
f) Study: Optimistic learners dedicate more time to studying, resulting in better performance compared to pessimistic children who tend to study infrequently.

RESEARCH METHODS

The study adopts an experimental approach to investigate the impact of Adversity Quotient (AQ) on Natural Science learning outcomes. The participants in this study are 25 students from class IV MI Miftahul Fiqhiyyah. The selection of class IV was based on interviews conducted with the homeroom teacher, considering the varying levels of understanding among the students as evident from their daily science test scores. To collect the necessary data, the following instruments were utilized: the Adversity Quotient Questionnaire and a Learning Outcome Test to assess students' proficiency in studying. The test results were categorized into four groups: very low, low, moderate, and high. For data analysis, the researcher employed the Statistical Product and Service Solution (SPSS) version 21-32 bit for Windows (IBM SPSS version 21-32 bit) based on the collected data. In this current study, the research hypotheses are formulated as follows:

H0: There is no significant impact of Adversity Quotient (AQ) on Natural Science learning outcomes.
H1: There is a significant impact of Adversity Quotient (AQ) on Natural Science learning outcomes.

RESULT AND DISCUSSION

Results

After collecting data from the predetermined sample of 25 participants, the following data was obtained: The following is a summary of the results from the student adversity quotient questionnaire:

Table 1. Questionnaire Scores *(Adversity Quotient)*

NO	Score	Criterion
1	91.00	high
2	108.00	High
3	104.00	High
4	109.00	High
5	109.00	Moderate
6	103.00	High
7	101.00	Moderate
8	102.00	High
9	104.00	High
10	109.00	High
11	119.00	Moderate
12	117.00	Moderate
13	114.00	High
14	114.00	High
15	112.00	Moderate
16	113.00	High
17	113.00	High
18	113.00	High
19	113.00	High
20	113.00	High
21	111.00	High
22	110.00	High
23	110.00	High
24	117.00	High
25	111.00	High

Table 2 is a recap of the results of student learning outcomes.

Table 2. Scores of Learning Outcomes Data

NO	Score	Criterion
1	88.00	High
2	84.00	High
3	82.00	High
4	80.00	Moderate
5	84.00	High
6	82.00	High
7	86.00	High
8	82.00	High
9	88.00	High
10	84.00	High
11	88.00	High
12	86.00	High
13	84.00	High
14	80.00	Moderate
15	86.00	High
16	78.00	Moderate

NO	Score	Criterion
17	84.00	High
18	76.00	Moderate
19	82.00	High
20	78.00	Moderate
21	86.00	High
22	88.00	High
23	86.00	Moderate
24	78.00	Moderate
25	84.00	High

Descriptive Analysis of Research Results

Normality Test

The results of the normality test on the existing data show that the distribution of plots is around and along the 45' line; thus the data in this research variable are normally distributed. The distribution of the data can be seen in the following figure:

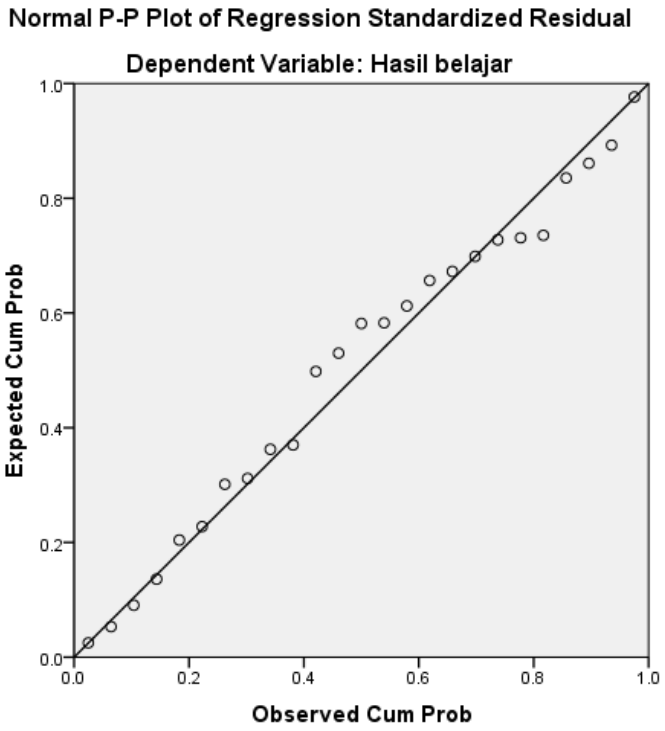

Figure 1: Normal Distribution Graph

Statistic analysis

a) Statistical F-test

The F test is used to test the first hypothesis whether there is a significant effect of the Adversity Quotient variable (X_2) on the dependent variable Learning Outcomes (Y).

1) Hypothesis Test 1. Based on the calculation of the F test for testing the hypothesis using IBM SPSS version 21, the following results are obtained:

Table 3. *ANOVA (Adversity Quotient)*

ANOVA[a]					
Model	Sum of Squares	df	Mean Square	F	Sig.

1	Regression	24.028	1	24.028	2.049	.166[b]
	Residual	269.732	23	11.727		
	Total	293.760	24			

a. Dependent Variable: Learning outcome

b. Predictors: (Constant), AQ (x2)

The steps for testing the hypothesis are as follows:

1. Establishing a hypothesis
   Ho: ρ2 = 0
   The value of the Adversity Quotient questionnaire (X_2) has no significant effect (= 0) on the value of learning outcomes (Y).
   Ha: ρi ≠ 0
   The value of the Adversity Quotient questionnaire (X_2) has a significant (≠0) effect on the value of learning outcomes (Y).
2. Determining the significance level (α = 0.05)
3. Determining the value of F table Degrees of freedom (df) Residual (remaining), namely 23 as the denominator df and Regression df (treatment), namely 1 as df quantifier, obtained the F table value of 4.28.
4. Comparing the calculated F value with F table from the ANOVA table above, it is obtained that the calculated F value = 2.049 and F table = 4.28
5. Drawing Conclusions

Acceptance criteria:

If F Count > F Table, then the research hypothesis (Ha) is accepted, or Ho is rejected. Because the value of F Count = 2.049 > value of F Table = 4.28 then Ha is accepted while Ho is rejected.

Thus, the results of the analysis indicate that the Adversity Quotient (X_2) has a significant effect on Learning Outcomes (Y).

DISCUSSION

Based on the coefficients table data, the researcher can gather information regarding the F Count greater than the F Table. Consequently, the research hypothesis (H1) is accepted, while the null hypothesis (Ho) is rejected. This conclusion is drawn from the fact that the F Count value of 2.049 exceeds the F Table value of 4.28. It implies that Adversity Quotient (X_2) significantly influences Learning Outcomes (Y). Therefore, based on this presentation, we can conclude that there exists a positive and significant impact of Adversity Quotient (X_2) on students' learning outcomes. As a result, the second hypothesis analysis is accepted, with H1 being accepted and Ho is rejected.

The statement suggests that the findings of the current study align with Goleman's theory [3], indicating an impact on learning outcomes in relation to Emotional Quotient (EQ) and Adversity Quotient (AQ). It emphasizes that the study considers multiple factors and character development in examining this influence. Goleman's theory, known for his work on emotional intelligence, suggests that emotional skills play a crucial role in various aspects of life, including learning and personal growth. EQ refers to an individual's ability to recognize, understand, and manage their own emotions, as well as understand and empathize with others' emotions. The statement also highlights the importance of Adversity Quotient (AQ), which relates to an individual's capacity to navigate challenges and transform them into opportunities for growth. By considering both EQ and AQ, the study acknowledges the multifaceted nature of learning outcomes and their connection to emotional and adaptive skills.

The presented data reveals that 18 students fall within the High category for Adversity Quotient, while seven students are categorized as Fair. Consequently, it can be inferred that the majority of students possess a high level of Adversity Quotient, indicating their strong traits of control, resilience, determination, adaptability, and perseverance. These attributes are evident in

their responses to natural science, as they exhibit a lack of discouragement despite considering it a challenging subject.

The students' good self-control is further demonstrated by their punctual attendance in natural science classes, sincere engagement with natural science problems, and their ability to remain attentive without feeling sleepy while studying science. Moreover, they maintain a strong aspiration to achieve high scores in science, leading them to invest considerable effort in comprehensively solving problems. This aligns with Huijuan's view point that the Adversity Quotient is one of the factors influencing students' academic achievement. Students in the High category exhibit efficient decision-making skills when tackling natural science problem-solving tasks, as they quickly grasp the problem requirements and require minimal time for comprehension. They strive to deepen their understanding by studying science extensively until they achieve optimal performance. Additionally, they confidently articulate and explain their answers to the class.

According to Widyastuti (2018), students with a High Adversity Quotient (AQ) type refrain from complaining about given problems. They do not accept the obtained results at face value but instead, reevaluate them critically. When considering the Origin and Ownership indicators, most students responded positively. Based on this research, students in this category are more inclined towards natural science than other subjects. They invest greater effort in understanding science questions and persistently study the subject until they achieve maximum performance. Furthermore, they demonstrate the ability to explain their obtained answers. In terms of the Reach indicator, students display a moderate level. This indicates that they experience satisfaction upon finding answers to science questions. Consequently, when encountering challenging questions, they persevere until they uncover the solution. Notably, students with a high AQ tend to exhibit high learning motivation, contributing to better and more fulfilling learning outcomes or achievements (Rukmana, dkk, 2016).

Regarding the Endurance indicator, students also responded positively. This study revealed that students in this category are determined to complete science questions, persevering and enduring challenges (Hikmatussyarifah, dkk. 2016). The results indicate that Adversity Quotient and Self-Determination influence Science Problem Solving Ability. Therefore, the Adversity Quotient of students positively impacts their Science Problem Solving Ability. The study by Afri (2018) highlights that individuals with a higher Adversity Quotient (AQ) tend to exhibit traits of optimism and innovation when faced with difficulties. They display a greater sense of responsibility in problem-solving, actively seeking ways to overcome challenges.

The adversity Quotient, as explained, refers to an individual's ability to adapt and navigate through various problems or challenges they encounter in life. Instead of being discouraged by adversities, individuals with a higher AQ perceive them as opportunities for growth and development. They recognize that these challenges need to be addressed and resolved to the best of their abilities (Widyastuti, 2015). Overall, the study suggests that a higher AQ can positively influence individuals' mindsets and approaches to problem-solving, fostering a proactive and optimistic attitude toward overcoming difficulties. It emphasizes the importance of developing and nurturing AQ as a valuable personal and professional growth asset.

CONCLUSION

This current study examines whether Adversity Quotient (AQ) significantly or insignificantly affects elementary school students' Natural Science learning outcomes. Based on the research results, the students demonstrate a high average level of Adversity Quotient. Additionally, their average Science Problem Solving Ability falls within the high category. Therefore, it can be inferred that there is a significant impact of Adversity Quotient on students' Science Problem Solving Ability (H1 is accepted). Based on the given information, the following suggestions can be made: (1) Further investigating the specific factors within Adversity Quotient (AQ) that contribute to the significant impact on students' Science Problem Solving Ability. This can help identify which aspects of AQ are most influential and can be targeted for intervention or improvement. (2) Exploring strategies to enhance Adversity Quotient (AQ) among elementary school students. This

could involve implementing resilience-building activities or interventions aimed at developing their ability to overcome challenges and adapt to difficult situations. (3) Conducting longitudinal research to determine the long-term effects of Adversity Quotient (AQ) on Natural Science learning outcomes. This would provide insights into how AQ may influence students' academic performance and problem-solving abilities over time.

ACKNOWLEDGEMENT

Many thanks to University of Wijaya Kusuma Surabaya for supporting and funding this research. Thanks are also given to all parties who have helped carry out research and research publications. I hope this research can be useful for many parties.

REFERENCES

Afri, L. D. (2018). Hubungan adversity quotient dengan kemampuan pemecahan masalah siswa SMP pada pembelajaran matematika. *AXIOM: Jurnal Pendidikan Dan Matematika*, 7(2): 47-53. http://dx.doi.org/10.30821/axiom.v7i2.2895

Agustina, P., & Suniasih, N. (2021). Adversity Quotient (AQ) Ditinjau dari Jenis Kelamin Siswa Kelas VI SD. *Mimbar Ilmu*, 26(1), 118–127. https://doi.org/10.23887/mi.v26i1.32284

Goleman, D. (2005). *Kecerdasan Emosi untuk Mencapai Puncak Prestasi.* Jakarta: PT Gramedia.

Gusta, W., Gistituati, N., & Bentri, A. (2022). Analisis Adversity Quotient (AQ) Terhadap Motivasi Belajar Siswa Dalam Pembelajaran Daring . *PEMBELAJAR: Jurnal Ilmu Pendidikan, Keguruan, dan Pembelajaran* , 6(1):64-70. https://doi.org/10.26858/pembelajar.v6i1.26748

Hardianto, Y., & Sucihayati, R. B. (2019). Hubungan adversity quotient dengan career adaptability pada koas angkatan 2015 Fkg "X" di Rsgm. *Psibernetika*, 11(2): 629-626. http://dx.doi.org/10.30872/psikoborneo.v10i3

Hidayat, W., & Sariningsih, R. (2018). Kemampuan Pemecahan Masalah Matematis Dan Adversity Quotient Siswa SMP Melalui Pembelajaran Open Ended. . *JNPM (Jurnal Nasional Pendidikan Matematika*, 2(1), 109-118. http://jurnal.ugj.ac.id/index.php/JNPM/article/view/1027

Hikmatussyarifah, H., Hasanah, U., & Tarma, T. (2016). Pengaruh Kelekatan Keluarga Terhadap Adversity Quotient Pada Mahasiswa Bidik Misi. *Jurnal Kesejahteraan Keluarga dan Pendidikan*, 3(2), 94-99. https://doi.org/10.21009/JKKP.032.09

Huijuan, Z. (2009). *The Adversity Quotient and Academic Performance Among College Students at St. Joseph's College.* Quezon City: Tesis. Available at www. peaklearning.com.

Mantue, E., Haris, I., & Arsyad, A. (2021). Pengaruh Adversity Quotient, Perhatian Orang Tua, Dan Motivasi Terhadap Hasil Belajar Peserta Didik Di Smp Negeri Togean Kabupaten Tojo Una-Una. *Jurnal normalita*, 9(3): 503-518. https://ejurnal.pps.ung.ac.id/index.php/JN/article/view/1133

Rukmana, I., Hasbi, M., & Paloloang, B. (2016). Hubungan adversity quotient dengan hasil belajar matematika siswa kelas XI SMA Negeri Model Terpadu Madani Palu. *Jurnal Elektronik Pendidikan Matematika Tadulako*, 3(3), 325-333.

Safi'i, A, Muttaqin, I, Sukino, Hamzah, N, Chotimah, C, Junaris, I, & Rifa'i, M. (2021). The effect of the adversity quotient on student performance, student learning autonomy and student achievement in the COVID-19 pandemic era: evidence from Indonesia. *Heliyon*. 7. e08510. 10.1016/j.heliyon.2021.e08510.

Stoltz, P. (2000). *Adversity Quotient: Mengubah Hambatan Menjadi Peluang. Translation: T. Hermaya.* . Jakarta: Gramedia Widiasarana Indonesia.

Widyastuti, R. (2015). *Proses berpikir siswa dalam menyelesaikan masalah matematika berdasarkan teori Polya ditinjau dari adversity quotient tipe climber.* 6(2), 183-194.: Al-Jabar: Jurnal Pendidikan Matematika. https://doi.org/10.24042/ajpm.v6i2.48