JPPIPA 9(1) (2023)

Jurnal Penelitian Pendidikan IPA

Journal of Research in Science Education

http://jppipa.unram.ac.id/index.php/jppipa/index

The Effect of Adversity Quotient on Chemistry Learning Outcomes in Chemistry Subjects in Lhokseumawe City

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Received: October 27, 2022
Revised: December 24, 2022
Accepted: January 25, 2023
Published: January 31, 2023

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DOI: 10.29303/jppipa.v9i1.2339

Abstract: The purpose of this study was to determine the effect of the adversity quotient and students' cognitive learning outcomes in chemistry subjects by rank spearmen. This research is a quantitative study, with the school population in Lhokseumawe City including SMAN 1 Lhokseumawe, SMAN 5 Lhokseumawe, SMAN 6 Lhokseumawe, SMAN 7 Lhokseumawe with a sample of 413 students, the sampling technique in this study used cluster sampling. Data collection methods used are interviews, questionnaires, and documentation. Methods of data analysis using descriptive analysis, normality test, linearity test, multicollinearity test, heteroscedasticity test, and spearmen rank analysis. Spearmen's rank analysis shows the effect of an adversity quotient of 0.000 <0.05, which means that there is an influence of an adversity quotient on students' cognitive learning outcomes in chemistry subjects with a coefficient of determination of 3.50%.

Keywords: Adversity quotient; Chemistry learning outcome; Chemistry Subjects

Introduction

Education has an important role in aspects of human life because education can improve the quality of life. Human Resources can be used as a benchmark for the progress of a nation (Nahak & Bulu, 2020). One of the sciences that must be studied in chemistry. Chemistry is a natural science that studies the properties of objects and their changes (Suhendar, 2017) in chemistry lessons the knowledge previously obtained will be used to understand the next material (Muhayana et al., 2021). This is what causes students to often find difficulties in learning the next chemistry material, thus worsening learning outcomes. Jean Piaget called learning outcomes learning achievement (Sudjana, 2000). Satisfying learning achievements can be achieved by every student if they can learn properly, and avoid various threats, obstacles, and distractions (Parnawi, 2019).

Two factors affect student learning outcomes, namely internal factors and external factors (Sukmadinata, 2019). One of the internal factors is the adversity quotient (AQ). The adversity quotient is a fighting spirit that students must have in overcoming difficulties and problems in learning (Abdiyani et al., 2019). AQ strongly supports student success in increasing learning achievement (Hidayat & Sariningsih, 2018). Stoltz, (2000) explains adversity quotient is a potential that can turn obstacles into great opportunities. Research on AQ has focused on a wide range of participants, from school-aged children and college students to teachers and company employees (Wang et al., 2021). Wang et al (2021) also believe that the impact of AQ on student success factors still has research potential.

From the results of interviews with chemistry teachers in every school, the researchers wanted to examine the lack of adversity quotient that students have in learning chemistry. This is because students consider chemistry to be a difficult subject to learn. Many investigations and studies have shown that people's success depends not only on intelligence and ability but also on their resilience and ability to overcome setbacks and difficulties (Singh et al., 2017). Research conducted Ahmad, (2016) says that the adversity quotient has a direct and indirect effect on student achievement. Safi'i et al., (2021) also concluded

How to Cite:
Unaida, R., Lukman, I. R., Fakhrah, F., Zahara, Z., & Sabrina, N. (2023). The Effect of Adversity Quotient on Chemistry Learning Outcomes in Chemistry Subjects in Lhokseumawe City . *Jurnal Penelitian Pendidikan IPA*, *9*(1), 104–108. https://doi.org/10.29303/jppipa.v9i1.2339

that the adversity quotient is a construct that has a significant effect on student achievement, the higher the adversity quotient, the higher student learning success (Afri, 2018). Then the research conducted Nurfitriyanti et al. (2020) concluded that there was no significant effect between the adversity quotient on learning achievement. Research Komarudin et al. (2021) concluded that there was no effect of AQ type on students' creative thinking abilities, and Xing Wang's research concluded that the average student AQ score was 116.72 ± 11.39. AQ scores are negatively correlated with negative-coping, and maternal style (over-distraction, over-protection) (Wang et al., 2021).

After reviewing the literature on AQ which can significantly affect a person's stress resistance, researchers are curious to understand student AQ which can affect the learning outcomes of class XI students in Lhokseumawe City.

Method

This study uses a quantitative approach to the type of research ex-post factor. The research was conducted at SMA Kota Lhokseumawe class XI IPA. Respondents in this study were SMAN 1 Lhokseumawe, SMAN 5 Lhokseumawe, SMAN 6 Lhokseumawe, SMAN 7 Lhokseumawe with a sample of 413. Respondents were taken using cluster sampling techniques.

Data collection techniques include interviews, documentation, and adversity quotient questionnaires. The instrument used in this study was an adversity quotient questionnaire. Before conducting the research, the researcher tested the validity of the instrument (Expert Judgment) conducted by expert lecturers and tested the reliability of Cronbach's alpha method using SPSS. The data analysis technique in this study used Spearman's rank test. The prerequisite tests used in this study were the normality test using the Kolmogorov-Smirnov method, the linearity test, the multicollinearity test, and the heteroscedasticity test.

The research was conducted at SMAN Lhokseumawe with a sample of 413 students from class XI SMA. The results of the research presented include the results of the validity and reliability tests and the results of the prerequisite test.

Result and Discussion

This study aims to determine the effect of adversity quotient on student learning outcomes. The effect of the adversity quotient on student learning outcomes can be seen from the results of the rank spearmen correlation test that has gone through various prerequisite tests before, where the effect can be seen from the functional relationship of the adversity quotient variable to the variable student learning outcomes. The total number of respondents in this study was 413 students who were class XI high school students in Lhokseumawe City for the 2021/2022 academic year. The results of the study prove that there is an adversity quotient effect on student learning outcomes.

Reliability Test Result Data

Before conducting the research, the instrument was made and tested, namely the validity test and reliability test which were tested outside the sample. The student adversity quotient questionnaire instrument was validated by experts before being tried out. While the results of the student adversity quotient questionnaire reliability test were 0.708. This shows that the student adversity quotient questionnaire test instrument is reliable because $r11 \geq 0.60$. So that the student adversity quotient questionnaire instrument can and is feasible to use in this study.

Prerequisite Test Result Data

The normality test in this study was carried out using the Kolmogorow-Smirnow formula. The results of the adversity quotient normality test for chemistry learning outcomes can be seen in Table 1.

Table 1. Adversity quotient Normality Test Output on Student Chemistry Learning Outcomes

		AQ	Learning Outcome
N		413	413
Normal Parameters[a,b]	Mean	41.31	40.81
	Std. Deviation	4.903	20.523
Most Extreme Differences	Absolute	.073	.171
	Positive	.073	.171
	Negative	-.054	-.119
Test Statistic		.073	.171
Asymp. Sig. (2-tailed)		.000[c]	.000[c]

Based on the elaboration of the asymp sign value, it was found that the asymp sign in all data was smaller than the significant level (α) 5.00%. Kolmogorov smirnov (0.00<0.15). So it can be concluded that the data is not normally distributed.

The linearity test of the adversity quotient level data and student learning outcomes was carried out to find out whether the data was linear or not. The results of the adversity quotient linearity test on student learning outcomes can be seen in Table 2.

Based on the elaboration of the asymp sign value, it was found that the sign value in the data was smaller than the significant level (α) 5.00%, which was 0.00 and the value of $F_{count} \leq F_{table}$. This proves that there is a linear relationship between the adversity quotient variable and student learning outcomes. Because there is a linear relationship but not normally distributed, the next analysis used is rank spearmen analysis.

After the data is declared not normally distributed but linear, then the hypothesis is tested using rank spearmen analysis. Spearmen's rank test is used as an alternative to Pearson's correlation if the normality requirements are not met. The results of the calculation of rank spearmen analysis can be seen in Table 3.

Table 2. Adversity Quotient Linearity Test Output on Student Learning Outcomes

			Sum of Squares	Df	Mean Square	F	Sig.
Learning Outcome * adversity quotient	Between Groups	(Combined)	22721.398	27	841.533	2.148	.001
		Linearity	6063.196	1	6063.196	15.479	.000
		Deviation from Linearity	16658.202	26	640.700	1.636	.027
		Within Groups	150805.871	385	391.704		
		Total	173527.269	412			

Table 3. Output Hasil Uji Analisis Rank Spearmen

			Learning outcome	Adversity quotient
Spearman's rho	learning outcome	Correlation Coefficient	1.000	.185**
		Sig. (2-tailed)	.	.000
		N	413	413
	adversity quotient	Correlation Coefficient	.185**	1.000
		Sig. (2-tailed)	.000	.
		N	413	413

Based on the translation of the rank spearmen test results. The rho result is 0.185 meaning that it is categorized as strong in the Spearmen rank correlation data interpretation table. Meanwhile, for hypothesis testing, there is a spearmen rank correlation, which can be seen from the output results above with the sig (2-tailed) value, namely: 0.000, it can be concluded that sig 0.000 <0.05, it can be concluded that there a correlation between student learning outcomes variables with adversity quotient.

Adversity Quotient siswa

Based on the research that has been done, it was found that the adversity quotient (X1) of class XI IPA students in Lhokseumawe City as many as 413 students were in the "Good" category with an average score of 45 > 41.31≥37.5. From the results of distributing the questionnaire, it was found that the number of students who answered according to the category strongly agreed was 26.00%, agreed 61.00%, disagreed 12.00%, and strongly disagreed 2.00%. Previous studies have reported the effect of adversity quotient on various aspects of human life. For example, the effect of adversity quotient on motivation, achievement (Ridho, 2016) learning outcomes (Rukmana et al., 2016).

Student learning outcomes

In this study, the chemistry learning outcomes referred to are the results obtained by students in the knowledge (cognitive) aspect taken from the odd semester final exam scores for the 2021/2022 academic year. The results of the study showed that the learning outcomes of cognitive chemistry class XI IPA students in the city of Lhokseumawe for the 2021/2022 academic year of 413 students were at an average of 40.81.

The Effect of Adversity Quotient on Student Learning Outcomes

Based on the data analysis that has been carried out, there is an effect of the adversity quotient on the learning outcomes of class XI high school students in Lhokseumawe City for the 2021/2022 academic year. These results can be shown by the spearmen rank correlation coefficient of 0.000. This means adversity quotient influences student learning outcomes. This is consistent with the expression Nurhayati & Fajrianti, (2013) that there is a significant influence between the adversity quotient on student achievement, although the coefficient of determination obtained in this study is 3.50% which means "less", while the other 96.50% is influenced by other factors. The adversity quotient does not directly affect changes in the level of student learning outcomes (Muhayana et al., 2021) because the adversity quotient is one of the factors or not the only absolute factor that influences learning outcomes (Sa et al., 2021) like other factors, namely External factors and learning approaches (Irham & Wiyani, 2016) can also affect learning outcomes. This research reveals that adversity quotients affect student learning outcomes only by 3.50%, and adversity quotients affect students' ability to determine their own learning goals (Patria & Silaen, 2020) and student learning outcomes (Rukmana et al., 2016). Learning outcomes or learning achievements are not obtained instantly but with real effort.

Conclusion

Based on the results of the data analysis and the discussion previously described, it can be concluded that there is a significant influence between the adversity quotient on chemistry learning outcomes, this is evidenced by the significance value of less than 0.05. Even though it is weak, only 3.50% has the effect of the adversity quotient on learning outcomes. this study succeeded in proving its effectiveness. Based on the conclusions above, suggestions can be given, namely to examine other factors that also affect learning outcomes besides adversity intelligence.

References

Abdiyani, S. S., Khabibah, S., & Rahmawati, N. D. (2019). Profil kemampuan pemecahan masalah matematika siswa smp negeri 1 jogoroto berdasarkan langkah-langkah polya ditinjau dari adversity quotient. *Al-Khwarizmi: Jurnal Pendidikan Matematika Dan Ilmu Pengetahuan Alam*, *7*(2), 123-134. https://doi.org/10.24256/jpmipa.v7i2.774

Afri, L. D. (2018). Hubungan adversity quotient dengan kemampuan pemecahan masalah siswa SMP pada pembelajaran matematika. *AXIOM: Jurnal Pendidikan Dan Matematika*, *7*(2). Retrieved from http://jurnal.uinsu.ac.id/index.php/axiom/article/viewFile/2895/1703

Ahmad, S. R. (2016). Pengaruh math phobia, self-efficacy, adversity quotient dan motivasi berprestasi terhadap prestasi belajar matematika siswa SMP. *Jurnal Riset Pendidikan Matematika*, *3*(2), 259-272. https://doi.org/http://dx.doi.org/10.21831/jrpm.v3i2.6138

Parnawi, A. M. P. (2019). *Psikologi Belajar*. Deepublish Publisher. Retrieved from https://opac.perpusnas.go.id/DetailOpac.aspx?id=1239636

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://dx.doi.org/10.33603/jnpm.v2i1.1027

Irham, M., & Wiyani, novan ardy. (2016). *Psikologi pendidikan: Teori Dan Aplikasi Dalam Proses Pembelajaran*. Ar-Ruzz Media.

Komarudin, K., Monica, Y., Rinaldi, A., Rahmawati, N. D., & Mutia, M. (2021). Analisis Kemampuan Berpikir Kreatif Matematis: Dampak Model Open Ended dan Adversity Quotient (AQ). *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, *10*(2), 550. https://doi.org/10.24127/ajpm.v10i2.3241

Muhayana, I., Sridana, N., Prayitno, S., & Amrullah. (2021). Pengaruh adversity quotient terhadap hasil belajar matematika SMPN 1 Narmada tahun ajaran 2019 / 2020. *Griya*, *1*(2), 132–141. https://mathjournal.unram.ac.id/index.php/Griya/index

Nahak, R. L., & Bulu, V. R. (2020). Efektivitas model pembelajaran inkuiri terbimbing berbantu lembar kerja siswa berbasis saintifik terhadap hasil belajar siswa. *Jurnal Kependidikan: Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran*, *6*(2), 230-237. https://doi.org/10.33394/jk.v6i2.2369

Nurfitriyanti, M., Rosa, N. M., & Nursa'adah, F. P. (2020). Pengaruh Kemampuan Berpikir Kritis, Adversity Quotient dan Locus of Control Terhadap Prestasi Belajar Matematika. *JKPM (Jurnal Kajian Pendidikan Matematika)*, *5*(2), 263. https://doi.org/10.30998/jkpm.v5i2.5929

Nurhayati, & Fajrianti, N. (2013). *Pengaruh Adversity Quotient (AQ) Dan Motivasi Berprestasi Terhadap Prestasi Belajar Matematika*. *3*(1), 72–77. http://dx.doi.org/10.30998/formatif.v3i1.110

Patria, T. M., & Silaen, S. M. J. (2020). Hubungan self esteem dan adversity quotient dengan kemandirian belajar pada siswa kelas x di man 20 jakarta timur. *Jurnal IKRA-ITH Humaniora*, *4*(1), 24–37.

Ridho, E. (2016). Hubungan Adversity Quotient Dengan Motivasi Berprestasi Pada Mahasiswa Yang Mengikuti Organisasi Intra (Bemfa). *Jurnal Penelitian UMM*, *5*(2), 209–220.

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. http://jurnal.untad.ac.id/jurnal/index.php/JEPMT/article/view/7220

Sa, A., Muttaqin, I., Hamzah, N., Chotimah, C., & Junaris, I. (2021). *Heliyon The effect of the adversity quotient on student performance , student learning autonomy and student achievement in the COVID-19 pandemic era : evidence from Indonesia*. *7*(June), 1–8. https://doi.org/10.1016/j.heliyon.2021.e08510

Safi'i, A., Muttaqin, I., Hamzah, N., Chotimah, C., Junaris, I., & Rifa'i, M. K. (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*(12), https://doi.org/10.1016/j.heliyon.2021.e08510

Singh, S., & Sharma, T. (2017). Affect of adversity quotient on the occupational stress of IT managers in India. *Procedia Computer Science*, *122*, 86-93. https://doi.org/10.1016/j.procs.2017.11.345

Stoltz, P. G. (2000). *Adversity Quotient: Mengubah Hambatan menjadi Peluang*. PT Grasindo.

Sudjana, N. (2000). *Penilaian Hasil Proses Belajar Mengajar*. Remaja Rosda Karya.

Suhendar, D. (2017). Fikih (Fiqh) air dan tanah dalam taharah (thaharah) menurut perspektif ilmu kimia. *JURNAL ISTEK*, *10*(1). Retrieved from https://journal.uinsgd.ac.id/index.php/istek/article/view/1465

Sukmadinata. (2019). *Landasan Psikologi Proses Pendidikan*. Pt Rosdakarya.

Wang, X., Liu, M., Tee, S., & Dai, H. (2021). Analysis of adversity quotient of nursing students in Macao: A cross-section and correlation study. *International Journal of Nursing Sciences*, *8*(2), 204–209. https://doi.org/10.1016/j.ijnss.2021.02.003