The effect of Learning Method and Adversity Intelligence on Student Learning Outcomes

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Abstract: *Learning outcomes are fundamental elements in education that shape the direction of learning experiences and provide a concrete path for academic success. This study aims to determine the influence of adversity intelligence and learning approaches on student learning results. This study employs a factorial design, specifically a 2 x 2 factorial design. The target population and sample for this research consist of Class XI students enrolled at SMKN 1 Keramatwatu during the 2023/2024 academic year. The research sample consisted of one hundred class XI pupils, selected from a total population of two hundred individuals. This research employed random sampling procedures to achieve the appropriate sample size for their investigation. The research findings indicate that there are notable disparities in the impact of learning methods on student learning outcomes (F = 7.911 and Sig. value = 0.005 <0.05). Additionally, there are significant variations in the influence of adversity intelligence on student learning outcomes (F = 7.922 and Sig. value = 0.001 < 0.05). Furthermore, there is a significant interaction effect between learning methods and adversity intelligence on student learning outcomes. This study demonstrates that educators has the capacity to employ a wide range of effective teaching methodologies in order to enhance students' learning outcomes. In addition, educators have the capacity to evaluate students' resilience and adaptation in both academic and non-academic settings.*
Keywords: *Adversity intelligence, learning method, learning outcomes.*

Pengaruh Metode Pembelajaran dan Kecerdasan *Adversity* terhadap Hasil Belajar Siswa

Abstrak: Hasil belajar merupakan unsur mendasar dalam pendidikan yang membentuk arah pengalaman belajar dan memberikan jalan konkrit bagi keberhasilan akademik. Penelitian ini bertujuan untuk mengetahui pengaruh *adversity intelligence* dan pendekatan pembelajaran terhadap hasil belajar siswa. Penelitian ini menggunakan desain faktorial yaitu desain faktorial 2 x 2. Populasi sasaran dan sampel penelitian ini terdiri dari siswa Kelas XI yang terdaftar di SMKN 1 Keramatwatu pada tahun ajaran 2023/2024. Sampel penelitian berjumlah seratus siswa kelas XI yang dipilih dari jumlah populasi dua ratus orang. Penelitian ini menggunakan prosedur pengambilan sampel secara acak untuk mencapai ukuran sampel yang sesuai untuk penyelidikan mereka. Temuan penelitian menunjukkan bahwa terdapat disparitas yang mencolok dalam dampak metode pembelajaran terhadap hasil belajar siswa (F = 7,911 dan nilai Sig. = 0,005 < 0,05). Selain itu, terdapat variasi pengaruh *adversity intelligence* terhadap hasil belajar siswa yang signifikan (F = 7,922 dan nilai Sig. = 0,001 < 0,05). Selanjutnya terdapat pengaruh interaksi yang signifikan antara metode pembelajaran dan *adversity intelligence* terhadap hasil belajar siswa. Studi ini menunjukkan bahwa pendidik memiliki kapasitas untuk menggunakan berbagai metodologi pengajaran yang efektif untuk meningkatkan kinerja hasil belajar siswa. Selain itu, pendidik mempunyai kapasitas untuk mengevaluasi ketahanan dan adaptasi siswa baik dalam lingkungan akademik maupun non-akademik.
Kata kunci: Hasil belajar, kecerdasan *adversity*, metode pembelajaran.

1. Introduction

Learning outcomes represent a foundational framework in the educational landscape, shaping the trajectory of learning experiences and providing a tangible roadmap for academic achievement. These outcomes are concise, measurable statements that summarise what students are expected to know, understand, and achieve as the culmination of a particular educational endeavour, be it a course, program, or degree. Serving as markers of educational goals, Learning outcomes guide instructors in creating practical learning experiences and empower students to navigate their academic journey with clarity and purpose. This

introduction explores the importance of student learning outcomes, exploring their role in driving transparency, accountability and continuous improvement in the dynamic field of education. Student learning outcomes show the abilities and qualities of students as a result of the learning process they have gone through. Melton means that learning outcomes are actions and performances that contain and reflect the competence of students who successfully use content, information, ideas and tools in learning (Begawanita, 2021).

Student learning outcomes are visible in students' abilities and qualities due to the learning process they have gone through. Melton defines learning outcomes as actions and performances that contain and reflect the competence of students who successfully use content, information, ideas and tools in learning (Marantika, 2022). This diversity provides challenges for educators who are tasked with formulating appropriate methods and adapted learning strategies. The inherent variability in verbal abilities among female students requires careful consideration in lesson planning. To optimise learning outcomes, instructors must navigate the complex landscape of linguistic aptitude, recognising the diverse nature of verbal skills among women. This recognition underscores the importance of adapting teaching methodologies to meet the diverse strengths and preferences that contribute to the academic success of female students. Therefore, educators are encouraged to apply a flexible and inclusive approach by creating an environment that accommodates the diverse verbal talents demonstrated by women in the learning process.

Differentiated learning strives to tailor the educational experience within the classroom to accommodate the unique needs of each learner. It involves the creation of diverse classrooms by offering avenues for students to grasp content, process concepts, and enhance their learning outcomes individually, thereby fostering more effective learning. The implementation of differentiated learning has the potential to heighten student engagement and improve overall academic performance, providing students with opportunities to learn organically and efficiently. In this model, students collectively receive comprehensive support from educators to refine their specific areas of interest, reinforcing the idea that learning is their entitlement through opportunities for self-exploration (Faigawati et al., 2023).

Differentiated learning accommodates diversity and recognises diverse students in learning according to student's readiness, interests, and preferences (De Jager, 2013). This strategy becomes particularly crucial when addressing challenges related to varying abilities among students in a single classroom setting. Differentiation aims to cultivate a positive and engaging learning environment by incorporating interactive learning activities, speaking practice, collaborative learning experiences, and carefully selecting instructional materials and methods (Ismajli & Imami-Morina, 2018). In addition to promoting a conducive learning atmosphere, implementing differentiation is a valuable tool for assessing students' preparedness to absorb and apply the lessons presented in the classroom (Amon & Anggal, 2021). By tailoring instruction to individual needs, educators can gauge students' readiness levels more effectively, fostering a more inclusive and practical learning experience. This personalised approach not only addresses the diverse academic capabilities within the class but also contributes to the overall success and satisfaction of each student on their educational journey.

Adversity intelligence, or intelligence in facing challenges, opens the door to developing skills that are much needed in a learning environment. This creates a close relationship between the performance level of tutors at the centre of learning activities and their ability to manage difficulties. As a measurable indicator, adversity intelligence can provide a clear picture of the extent to which a tutor can face and overcome obstacles that may arise. In this context of the research provides an in-depth understanding that an increase or decrease in adversity intelligence can reflect directly on a tutor's performance quality. Therefore, it is essential for learning activity centres to understand and implement strategies that can crease tutor adversity intelligence (Solfema, 2017).

Through a deep understanding of adversity intelligence, learning activity centres can design special development programs that suit the tutor's needs and characteristics. This personalised approach will increase training effectiveness and support sustainable growth in various learning challenges. The importance of adversity intelligence can also be integrated into tutor performance assessment. Learning activity centres can develop specific indicators that reflect progress in managing challenges, creating positive relationships with students, and contributing to an inclusive learning atmosphere. Thus, increasing adversity intelligence is about improving individual performance and creating a

learning environment that is responsive, dynamic, and able to adapt to change. Learning activity centres that integrate this concept into practice will be able to achieve optimal achievements in supporting students' academic and personal growth.

In line with the understanding that each student has a different level of readiness, interest and learning preferences, this research aims to evaluate the effectiveness of three different learning methods: differentiated learning, discovery learning and adversity intelligence. Previous studies show that more-than-optimal learning outcomes are often related to mismatched learning methods with students' learning styles. In this context, Differentiated learning is the focus of research because its approach adapts learning to each student's unique characteristics, such as level of readiness, interests and learning preferences (De Jager, 2013). Discovery learning, which actively encourages students to explore knowledge through active exploration and discovery, is also a research focus because it can increase student engagement (Mayer, 2004). Meanwhile, adversity intelligence was investigated because of its approach that emphasises intelligence in facing challenges and difficulties. By detailing and comparing the three methods, this research aims to identify the most appropriate learning method to improve student learning outcomes. The findings from this research can provide practical guidance for educators to choose and implement learning methods that suit the needs and characteristics of their students to create more meaningful and compelling learning experiences.

2. Research Method

The present investigation utilized a quantitative approach in order to examine hypotheses and establish causal relationships between variables (Degeng, 2000). The research employs a factorial design 2x2, which is an extension of the between-group design. This variation examines the concurrent influence of two or more treatment variables on a dependent variable (Creswell, 2014). Additionally, it has been suggested by other authorities that this research utilizes a factorial design, specifically a 2 x 2 factorial design, in conjunction with a non-equivalent control group (Degeng, 2000). The population and samples for this investigation were Class XI students enrolled at SMKN 1 Keramatwatu during the academic year 2023/2024. One hundred students from class XI out of a total population of two hundred comprise the research sample. A random sampling

technique was employed by the researchers in order to ascertain the quantity of research samples can be seen in table 1 below.

Table 1. Factorial Design 2x2

| Adversity Intelligence (B) | Learning Method(A) | | ∑ Total |
	Differentiated Learning (A1)	Discovery Learning (A2)	
High(B1)	A1B1	A2B1	∑A1B1+A2B1
Low (B2)	A1B2	A2B2	∑A1B2+A2B2
∑ Total	AIB1+AIB2	A2B1+A2B2	

Note:
A   : Learning method
A1   : Differentiated learning
A2   : Discovery learning
B   : Adversity intelligence
B1   : High
B2   : Low
Y   : Learning outcomes
A1B1 : The group of students with high adversity intelligence taught using differentiated learning.
A1B2 : The group of students with low adversity intelligence taught using differentiated learning.
A2B1 : The group of students with high adversity intelligence taught using discovery learning.
A2B2   : The group of students with low adversity intelligence taught using discovery learning.

The data gathering tools consist of examinations that measure learning outcomes and questionnaires that assess adversity intelligence. The students were administered two types of assessments to get the data. The researcher directed the students to complete a pretest on topics related to electrical installation. During the therapy process, researchers utilize the learning approaches of differentiated learning and discovery learning in order to enhance the results of learning. The posttest involved a similar evaluation of electrical installation subjects as the pretest. This research employed pre-test and post-test scores to analyze the data. Subsequently, the scholar aggregated the test data into a concise overview. The questionnaire employed to assess the cognitive resilience of students.

3. Result and Discussions

Prior to proceeding with the inferential analysis, researchers conducted a test to ensure the normality and consistency of their data. The data in Table 2 provides support for the normalcy test.

Table 2. Tests of Normality

Tests of Normality			
	Kolmogorov-Smirnov[a]		
	Statistic	df	Sig.
Learning Outcomes	.070	100	.200[*]

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The results of the homogeneity test using Levene's test are shown in Table 3. The statistical significance is shown by the value of Sig. 0.140 > 0.05.

Table 3. Homogeneity Test

Levene's Test of Equality of Error Variances[a]			
Dependent Variable: Learning Outcomes			
F	df1	df2	Sig.
1.868	3	95	.140

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + A + B + A * B

Both the Kolmogorov-Smirnov test and the Shapiro-Wilk test indicate that this is the case, with significance values of 0.200 (more than 0.05) and 0.276 (greater than 0.05), respectively. Furthermore, the data utilised in the investigations is coherent.

The implementation of the differentiated learning model varied are shown in Table 4.

The findings shown in Table 4 demonstrate that the implementation of the differentiated learning model varied , therefore providing an answer to the initial research question. This is demonstrated by the disparities in test scores before and after treatment between the experimental and control groups. The experimental class was subjected to differentiated learning and adversity intelligence strategies. The scores varied between 64.00 for a cohort of 30 kids and 59.47 for a cohort of 20 students that were exposed to differentiated teaching and/or possessed poor adversity intelligence. This demonstrates that the integration of personalised learning and resilience in the face of challenges results in enhanced learning outcomes.

Table 5 also shows that a two-way ANOVA (Analysis of Variance) test reveals a significant difference in the effects of differentiated learning on the learning outcomes of students with adversity intelligence, with Fo = 7.911 and Sig = 0.005<0.05. This agreed with what Sitorus et al. (2022) had discovered. Because it encourages

students to actively seek knowledge in accordance with their own learning styles, this differentiated learning model has a substantial impact on enhancing learning outcomes. Students learn in classes organized around similar preferences for how they best retain information, with guidance from their instructors.

Table 4. Description of Statistic

Descriptive Statistics				
Dependent Variable: Learning Outcomes				
Learning Method	Adversity Intelligence	Mean	Std. Deviation	N
Differentiated Learning	High	64,00	16.669	30
	Low	59.47	19.098	20
	Total	61.28	17.632	50
Discovery	High	63.29	13.446	35
	Low	52.40	13.065	15
	Total	60.02	14.128	50
Total	High	61.52	15.021	65
	Low	59.03	17.551	35
	Total	60.65	15.908	100

Table 5. The test of ANOVA 2 Ways

Tests of Between-Subjects Effects					
Dependent Variable: Learning Outcomes					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1530.540[a]	3	510.180	12.082	.108
Intercept	320285.623	1	320285.623	1307.054	.000
Learning Method	339.042	1	339.042	7.911	.005
Adversity Intelligence	225.975	1	225.975	7.922	.001
Learning Method * Adversity Intelligence	1331.383	1	1331.383	5.433	.002
Error	23524.210	96	245.044		
Total	392897.000	100			
Corrected Total	25054.750	99			

a. R Squared = .085 (Adjusted R Squared = .082)

According to the results presented in Table 5, the two-way ANOVA analysis reveals significant disparities in student learning outcomes among different learning modalities. This is demonstrated by the outcomes of a two-way parametric test or ANOVA, in which the computed F value is compared to the tabulated F value at a significance level of 5%. The computed F value (F = 7.911 and Sig. value = 0.005<0.05) is higher than the critical F value (3.936) indicating statistical significance. In addition, the Sig value (0.005) is below the significance threshold of 0.05. This study employs a two-way ANOVA to examine variations in variance among several groups. This technique aligns with the researcher's established study objectives and problem definition. Two-way ANOVA, often known as analysis of variance, is employed to examine the interactions among groups of variables.

In addition, the learning methods exert a substantial impact on the academic achievements of students. There exists a distinction between high and low levels of adversity intelligence in relation to the impact on student learning outcomes. The comparison between the computed F value and the table F value at a significance level of 5% is conducted by the 2-way parametric test or ANOVA results. The computed F value (F = 7.922 and Sig. value = 0.001 < 0.05) exceeded the critical F value (3.936) from the table, indicating statistical significance (Sig. value = 0.001 < 0.05). These findings align with the second research inquiry. The findings of the third study demonstrated a significant relationship between learning methods and the levels of adversity intelligence (high and low) in relation to student learning outcomes. This is demonstrated by the outcomes of a 2-way parametric test or ANOVA, in which the computed F value is compared to the tabulated F value at a significance level of 5%. The computed F value (F = 5.433 and Sig.=0.002<0.05) above the F table value (3.936), indicating statistical significance. Furthermore, the significance value (0.001) is below the significance criterion of 0.05.

To address the research hypothesis, which comprises four individual research hypotheses, we will rely on the findings from our investigation. The primary premise of this study pertains to the investigation of potential disparities in learning approaches and their impact on the learning outcomes of students. Table 5 reveals variations in methods of learning and their impact on learning outcomes, which aligns with the findings of previous study conducted (Arwaty & Lullulangi, 2022; Fauziyati, 2020; Salar & Turgut, 2021; Sitorus et al., 2022), have shown that the use of differentiation learning and discovery learning approaches leads to enhanced student learning results. Learning outcomes refer to the observable changes in student behaviour that take place as a result of engaging in learning activities. Learning outcomes can serve as a benchmark or point of comparison for assessing the transformation in students' knowledge or skills before and after instruction. This learning outcome serves as the ultimate assessment derived from the other learning outcomes (Magdalena et al., 2021).

The second hypothesis posits that there exists a disparity in student learning outcomes based on the level of adversity intelligence, distinguishing between high and low levels. The results of this study align with the findings of (Akbar & Nurhidayati, 2018; Hidayat et al., 2023; Safi'i et al., 2021; Samsilayurni et al., 2021; Tiara et al., 2023), indicating that adversity intelligence has the potential to enhance student learning outcomes. Adversity intelligence is an essential form of intelligence for pupils. Adaptability and resourcefulness are essential for achieving success when confronted with challenges (Ainun et al., 2022).

The third hypothesis posits that there exists an interaction effect between different learning approaches and varying levels of adversity intelligence, which in turn affects student learning outcomes. The results of this study align with (Purba, 2015) findings, indicating a significant interplay between students' advertising intelligence and their learning tactics on learning outcomes. This research suggests that instructors have the ability to employ diverse and suitable instructional strategies to enhance students' learning outcomes. Additionally, teachers can assess students' resilience and adaptability both within and beyond the classroom.

4. Conclusion

By examining research findings and discussions, this study seeks to ascertain the impact of adversity and learning methods on the learning outcomes of students. Based on the findings, it can be concluded that differentiation and discovery learning methods yield substantial variations in student learning outcomes. Additionally, the interaction between learning methods and intelligence adversity has a significant impact on student learning outcomes, as do learning outcomes influenced by students' high and low levels of adversity intelligence. According to this research, educators possess the

capacity to utilise a wide range of appropriate instructional methods in order to improve the academic performance of their pupils. Additionally, educators have the ability to evaluate the resilience and adaptability of their pupils in contexts outside the classroom.

It is hoped that further research will be carried out to further improve student learning outcomes through differentiated learning at various levels of Indonesian education, not only at vocational schools and further research is also needed to investigate students using various variables or different methodologies than those used in this research.

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