

Research Article

Transformation of Elementary School Students' Learning Outcomes: The Role of Independence, Discipline and Learning Environment

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Abstract

This research aims to identify and analyze the influence of the learning environment, self-reliance, and discipline on the academic achievement of elementary school students. Through a deep understanding of these factors, effective strategies can be developed to enhance the quality of education and student achievement. This research delves into the intricate dynamics between the learning environment, student self-reliance, discipline, and their collective influence on the academic achievement of elementary school students. Grounded in the quantitative research methodology, the study employs a structured approach to investigate these factors. The research asserts that a positive and supportive learning environment, higher levels of student independence, and greater student discipline are pivotal in enhancing student learning outcomes. The study population comprises all Bua, Luwu Regency primary school students, focusing on fifth and sixth-grade classes. Cluster random sampling was utilized to ensure a representative sample of students. Data collection was executed through a well-designed questionnaire featuring a Likert scale format. The rigorous data analysis involved multiple regression to elucidate the relationships between the independent variables (learning environment, student independence, student discipline) and the dependent variable (learning outcomes). Findings from the study are anticipated to shed light on effective strategies to bolster educational practices and student achievements. Educators and policymakers can leverage these insights to design interventions that optimize the learning environment, foster student independence, and promote discipline, ultimately enhancing the quality of education and academic performance among elementary school students.

Keywords: academic achievement; learning environment; student discipline; learning outcomes.

1. INTRODUCTION

Education not only aims to provide knowledge but also to shape the character and personality of students (Arthur, 2003; Arthur et al., 2016). The educational process aims to produce individuals who are not only academically intelligent but also possess integrity, high morals, and ethics. Therefore, families, communities, and nations must collaborate to realize these educational rights to enhance individuals' quality of life and well-being. Education is a crucial foundation for developing individuals and societies in a rapidly changing and increasingly complex global environment (Idkhan & Idris, 2021; Suarlin et al., 2021). The challenges of globalization, technological advancements, and socioeconomic dynamics demand an educational system capable of preparing students to face these changes. Quality education encompasses academic aspects and the development of essential life skills crucial for personal well-being and social



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contribution. These skills include critical thinking, creativity, collaboration, communication, and leadership. Holistic and inclusive education must also consider students' cultural diversity, language, and socioeconomic backgrounds. Education should create a learning environment that values difference and promotes social inclusion, essential for fostering a tolerant, fair, and harmonious society. In this regard, teachers are facilitators, motivators, and guides in teaching and learning (Suarlin & Ali, 2020).

Quality education requires continuous efforts to enhance teacher competence, improve curriculum, and provide adequate educational facilities (Darling-Hammond & Sykes, 2003). Competent and dedicated teachers are critical to the educational process (Annan, 2020). They should receive continuous professional training and development to adopt innovative and effective teaching methods. A relevant and up-to-date curriculum is also crucial, designed to accommodate the changing needs of society and the job market. A good curriculum should balance theory and practice and provide space for developing essential non-academic skills. Education is educators' conscious and systematic effort to influence students to internalize values and qualities aligned with educational goals. This process involves dynamic interaction between teachers and students within a specific educational environment, working together to achieve these educational goals (Ali & Arfandi, 2024). This interaction encompasses knowledge transfer, character formation, moral values, and social skills necessary for student development.

The education system in Indonesia continues to strive for improvement through various reforms and innovations, particularly in developing a curriculum relevant to current trends. A good curriculum must accommodate social, economic, and technological changes within society. Therefore, the Indonesian curriculum undergoes periodic changes to ensure the taught materials are relevant and meet the students' needs in facing future challenges (Soleman et al., 2020). Previous research indicates that several critical factors, including teacher competence, curriculum, teaching methods, and learning environment, significantly influence the quality of education. Teacher competence is one of the most critical factors in determining educational quality (Lamada et al., 2022). Competent teachers possess deep knowledge of the subjects they teach and practical pedagogical skills to deliver that knowledge. Research shows that highly competent teachers can create more interactive learning environments and encourage students to think critically and creatively.

A good curriculum balances theory and practice and can accommodate various learning styles. It should be designed to motivate students to learn and provide them with opportunities to maximize their potential. An adaptive and flexible curriculum is crucial to ensure students keep up with advancements in science and technology (O'Dell & Sulastri, 2019). Innovative and participatory teaching methods play a significant role in educational success. Approaches such as project-based learning, collaborative learning, and using technology in teaching have proven effective in enhancing students' academic performance. A conducive learning environment significantly influences students' academic achievement. Research indicates that a good learning environment, encompassing physical and social conditions, can enhance learning motivation and academic performance. A conducive learning environment includes comfortable classrooms, adequate learning facilities, and a social climate that supports positive interaction between students and teachers.

In addition to the above factors, self-reliance and study discipline are crucial elements contributing to students' learning success. Learning self-reliance means students can manage their learning, set learning goals, and take the initiative to achieve them without excessive external assistance. Study discipline includes students' ability to adhere to established rules and procedures, manage their time effectively, and maintain focus and concentration during learning (Gardner, 2021). Studies have shown that students with high self-reliance and discipline achieve better learning outcomes. Integrating these research findings into everyday educational practices requires a holistic and sustainable approach. Teachers need to be trained to develop their competencies continuously, curricula must be regularly updated to remain relevant, and teaching methods should be adapted to the needs and characteristics of students.

Moreover, creating a conducive learning environment and fostering self-reliance and study discipline should be top priorities for all stakeholders in education. By understanding and addressing these factors, it is hoped that the education system in Indonesia can produce graduates

who excel academically and are ready to face future challenges with solid skills and character. This will help create a generation capable of positively contributing to societal and national development and competing globally. Improving the quality of education in schools is often measured by students' academic achievements, influenced not only by intellectual abilities but also by external factors such as the learning environment, self-reliance, and discipline (Chapman & Adams, 2002; MacGilchrist et al., 2004; Nyerere, 1967). Common issues include a lack of student discipline, self-reliance, and inadequate learning environments. Initial observations at the research site reveal several critical issues that need addressing. The level of student achievement in thematic subjects remains moderate and requires improvement through learning interventions. The learning environment at school and home is not optimal in supporting student achievement (Padalia & Natsir, 2022). Schools have not fully served as good learning sources, and families provide insufficient support for children's discipline and self-reliance. Many students lack discipline in following school rules, fail to complete assignments, play during lessons, do not listen well to teachers, and are not neatly dressed in uniform. Additionally, students prefer playing over studying, feel embarrassed to ask when they do not understand the material, lack confidence in their assignment results, and often copy their classmates' work.

This research aims to identify and analyze the influence of the learning environment, self-reliance, and discipline on the academic achievement of elementary school students. Through a deep understanding of these factors, effective strategies can be developed to enhance the quality of education and student achievement. This study will contribute to developing educational theory and practice, particularly in understanding how the learning environment, self-reliance, and discipline impact student academic outcomes. The findings of this research can serve as a reference for educators and policymakers in designing more effective educational interventions.

2. RESEARCH METHOD

2.1 Research Approach

This study employs a quantitative research methodology, characterized by the presentation of numerical data. According to (Creswell & Creswell, 2017), quantitative research is an approach that extensively utilizes numbers throughout the research process, from data collection and interpretation to the presentation of results. This method is grounded in the philosophy of positivism and is typically used to investigate specific populations and samples. Sampling techniques are generally random to ensure representativeness. Data collection is conducted using research instruments, and the analysis is quantitative in nature, aiming to test predetermined hypotheses (Bernard & Bernard, 2013).

Grounded in the philosophy of positivism, this research assumes that reality is objective and can be measured through empirical evidence. Positivism supports the use of scientific methods to investigate natural and social phenomena, aiming for accuracy, reliability, and generalizability of results. This philosophical stance underpins the structured and systematic approach of quantitative research, ensuring that findings are based on observable and measurable data.

2.2 Research Design

The research design illustrates the relationship between the independent variables (X) and the dependent variable (Y). In this study, the independent variables consist of several factors believed to influence the dependent variable. In the context of educational research, understanding the dynamics between various factors that influence student performance is crucial. This study investigates the impact of three independent variables—learning environment, student independence, and student discipline—on the dependent variable, which is student learning outcomes. Below is a detailed explanation of these variables:

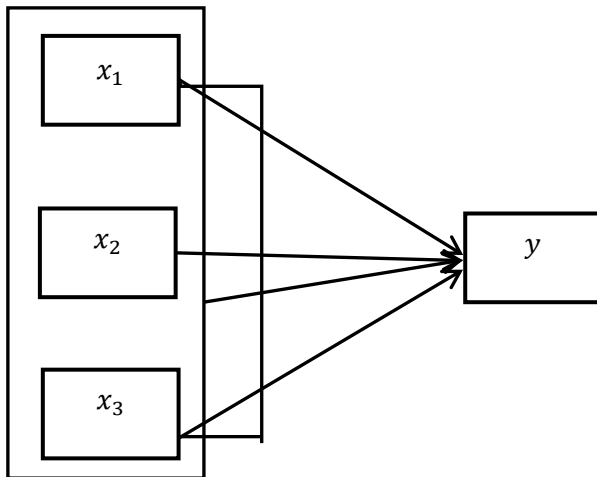


Figure 1. Research Design

Learning Environment (X1): The learning environment encompasses both physical and social factors where the teaching and learning processes take place. This includes the quality of classroom facilities, the availability of learning resources, and the overall atmosphere created by both peers and teachers. A conducive learning environment is believed to significantly affect students' ability to absorb and retain knowledge. Factors such as lighting, seating arrangements, noise levels, and classroom decoration, as well as the presence of supportive social interactions, collectively contribute to creating an optimal learning environment.

Student Independence (X2): Student independence refers to the degree to which students are capable of managing their own learning processes without needing constant supervision or assistance. These variable measures the ability of students to set goals, manage time effectively, and seek out resources independently to solve problems and complete tasks. Independent learners are typically more motivated and better equipped to handle the challenges of academic work, leading to higher academic achievement. Encouraging student independence is often seen as a way to foster critical thinking and lifelong learning skills.

Student Discipline (X3): Student discipline is defined as the adherence to rules and norms within the school environment. It encompasses students' behavior in terms of punctuality, attentiveness in class, completion of assignments, and general conduct. Discipline is crucial for maintaining an orderly and productive learning environment. It ensures that instructional time is used efficiently and that disruptions are minimized. High levels of discipline among students are associated with better academic performance as disciplined students are more likely to engage fully with the learning material and participate constructively in class activities.

Learning Outcomes (Y): Learning outcomes refer to the measurable academic achievements of students. These are typically assessed through various forms of evaluation, including exams, quizzes, assignments, and projects. Learning outcomes provide a quantifiable measure of student performance and understanding of the curriculum. High learning outcomes are indicative of effective teaching methods and a supportive learning environment, as well as the students' own efforts and abilities.

Hypothesized Relationships: In this study, the hypothesized relationships between the independent variables and the dependent variable are illustrated with arrows, showing the direction of influence. It is posited that:

- A positive and supportive learning environment (X1) will enhance student learning outcomes (Y).
- Higher levels of student independence (X2) will lead to better learning outcomes (Y).
- Greater student discipline (X3) will result in improved learning outcomes (Y).

2.3 Population & Sample

The research population includes every student at primary school, located in Bua, Luwu Regency. The total number of students enrolled is 109. This comprehensive inclusion aligns with

(Bungin, 2005) definition, which states that a population encompasses all objects of study that can serve as data sources. In this context, each student represents a potential data point contributing to the overall understanding of the study's focus.

The sampling method utilized in this research is cluster random sampling. This technique involves dividing the population into distinct groups (clusters) and then randomly selecting entire clusters for study. For this research, the chosen clusters are the fifth and sixth-grade classes. These classes were selected because they consist of older students who have a better understanding of their learning environment, independence, and discipline.

Cluster random sampling is advantageous in this context as it allows for efficient data collection while ensuring that the sample is representative of the entire student population. By focusing on the higher grades (V and VI), the research targets students who are more likely to provide reliable and insightful responses regarding their experiences and behaviors related to learning environments, independence, and discipline.

2.4 Data Collection

Effective data collection is a cornerstone of robust research. As highlighted by (Cohen et al., 2018; Creswell & Clark, 2018), researchers employ various techniques to gather the necessary data, and these techniques are fundamentally supported by well-designed instruments. The current study utilized a questionnaire with a Likert scale format, following the methodology outlined by (Creswell & Poth, 2016). This questionnaire aimed to capture data across several critical variables: the learning environment (X1), student independence (X2), student discipline (X3), and learning outcomes (Y).

In quantitative research, understanding the distinction between independent and dependent variables is crucial. According to (Creswell & Poth, 2016), independent variables (or predictor variables) are those that influence or cause changes in other variables, while dependent variables (or outcome variables) are the ones affected by these changes. This delineation is essential for structuring the research and for analyzing the relationships between variables effectively.

To ensure the accuracy and consistency of the data collected, the instruments used must be rigorously tested for validity and reliability. Validity refers to the degree to which an instrument measures what it purports to measure. In other words, a valid instrument accurately reflects the concept being studied. Reliability, on the other hand, pertains to the consistency of the instrument. A reliable instrument yields the same results under consistent conditions, ensuring that the data is dependable over time (Hair et al., 2010).

Before deploying the questionnaire in the main study, a pilot test was conducted with a specific subset of respondents to refine the instrument. This step is critical for identifying any potential issues and for confirming that the questions are clear and capable of eliciting the intended responses.

The questionnaire employed a four-point Likert scale, a widely-used rating system in social sciences research. This scale provides respondents with a range of options that reflect varying levels of agreement or disagreement with each statement. The responses collected on this scale offer nuanced insights into the attitudes and perceptions of the respondents, allowing for a detailed analysis of the study variables (Creswell & Poth, 2016; Silverman, 2016).

2.5 Data Analysis

Based on the quantitative research design employed, the data analysis in this study consists of inferential data analysis. The quantitative inferential analysis includes linear regression and multiple regression to determine the relationships and effects between independent and dependent variables. Additionally, descriptive data analysis methods used encompass calculating the mean, median, and percentages to describe the characteristics of the research sample.

2.5.1. Inferential Data Analysis

Multiple regression is employed when there are multiple independent variables predicted to affect a dependent variable. In the context of this study, multiple regression will be utilized to analyze the simultaneous influence of learning environment (X1), student independence (X2), and

student discipline (X_3) on academic achievement (Y). Multiple regression helps in understanding the individual effects of each independent variable while controlling for others, and identifies which variables exert the strongest influence. The regression analysis process involves several steps:

- Regression Assumption Testing: Before conducting regression, several assumptions must be tested, including linearity of relationships, homoscedasticity, normality of residuals, and absence of multicollinearity among independent variables.
- Regression Coefficients: Coefficients obtained from regression provide information about the direction and magnitude of the impact of each independent variable on the dependent variable.
- Significance Tests: t-tests and F-tests are used to determine the statistical significance of regression coefficients and the overall regression model. This ensures that the results obtained are not due to chance alone.

2.5.2. Descriptive Data Analysis

- Mean: Calculating the average value of collected data provides a general overview of the central tendency of the sample studied. The mean is used to understand the central distribution of data.
- Median: Determining the middle value of sorted data. The median is particularly useful for understanding data distribution, especially when data contain outliers that may affect the mean.
- Percentage: Calculating the proportion or frequency of data in specific categories to depict the characteristics of the research sample. For example, the percentage of students exhibiting high or low levels of independence.

Together, descriptive and inferential analyses offer a comprehensive understanding of the data. Descriptive analysis aids in providing an overview and essential characteristics of the data, while inferential analysis is used to test hypotheses and determine relationships and influences among variables. This approach enables the research to present more profound and more meaningful results, providing a robust basis for drawing conclusions and making recommendations based on the collected data.

3. RESULT AND DISCUSSION

4.1. Description of Research Result

The descriptive statistics for the variables used in this study include the minimum value, maximum value, mean, and standard deviation of the three independent variables: Learning Environment (x_1), Independence (x_2), and Student Discipline (x_3), as well as the one dependent variable: Learning Outcomes (y). These statistics are presented in the following table.

Table 1. Descriptive Analysis

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Learning Environment (x_1)	42	34	56	46.62	6.355
Independence (x_2)	42	34	56	46.52	6.333
Student Discipline (x_3)	42	22	36	29.90	3.773

The variable Learning Environment (x_1) was measured across 42 observations, with a minimum value of 34 and a maximum value of 56. The mean value was 46.62, and the standard deviation was 6.355, indicating a moderate spread of scores around the mean. Independence (x_2) was also measured across 42 observations, with a minimum value of 34 and a maximum value of 56. The mean value was 46.52, and the standard deviation was 6.333, showing a similar spread to the Learning Environment variable. Student Discipline (x_3) had 42 observations as well, with a minimum value of 22 and a maximum value of 36. The mean value was 29.90, and the standard deviation was 3.773, indicating a smaller spread of scores around the mean than the other variables. Learning

Environment and Independence have similar ranges and means, while Student Discipline has lower scores and less variability. The standard deviations suggest that while there is some variability in the scores, the spread is moderate, meaning most scores are close to the mean.

4.2. Classical Assumption

4.2.1. Normality Test

To determine whether the residuals of a regression model are normally distributed, we use a Normal Probability-Probability (P-P) plot. This plot is a graphical technique for assessing how closely the residuals follows a normal distribution.

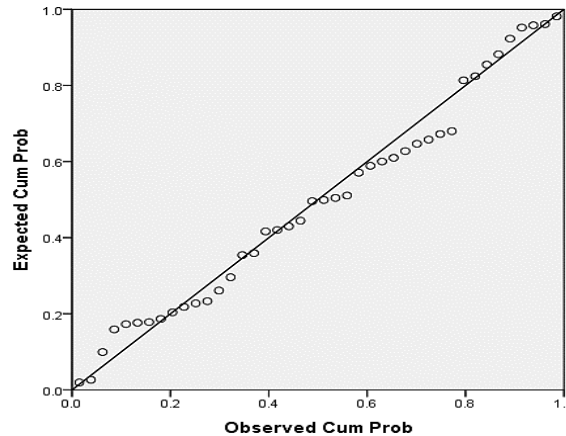


Figure 2. Normal P-P Plot

Figure 2 illustrates that the data points are closely aligned with a straight line. This alignment suggests that the residuals of the regression model are approximately normally distributed. Consequently, it can be inferred that the assumptions underlying the regression analysis are likely satisfied, enhancing the reliability and validity of the model's predictions.

4.2.2. Multicollinearities Test

A multicollinearity test is conducted to determine whether there is any independent (free) correlation within the regression model. This can be assessed by examining the Variance Inflation Factor (VIF) values, where a VIF less than 10 indicates no problematic multicollinearity. Alternatively, the tolerance values can be considered, with values greater than 0.1 suggesting an absence of multicollinearity issues.

Table 2. Multicollinearities Analysis

Variables	Collinearity Statistic	
	Tolerance	VIF
Learning Environment (x_1)	0.223	1.064
Independence (x_2)	0.224	1.065
Student Discipline (x_3)	0.936	1.069

Table 2 shows that the tolerance values for Learning Environment (x_1) are 0.223, Independence (x_2) is 0.224, and Student Discipline (x_3) is 0.936, all of which are greater than 0.1. Meanwhile, the VIF values for Learning Environment (x_1) are 1.064, Independence (x_2) are 1.065, and Student Discipline (x_3) are 1.069, all of which are less than 10. This indicates no multicollinearity in the equation, meaning that the relationships between the independent variables are tolerable and will not disrupt the regression results.

4.2.3. Heteroskedasticity Test

The heteroscedasticity test aims to assess whether the variance of the regression residuals is constant across all levels of the independent variables. This is typically evaluated using a scatterplot of the residuals against the predicted values. In a well-fitting model without heteroscedasticity, the points in the scatterplot should be randomly distributed without any apparent pattern. Suppose there is a discernible pattern, such as a funnel shape or any systematic structure. In that case, it indicates the presence of heteroscedasticity, which can lead to inefficient estimates and affect the validity of the regression results. Detecting and addressing heteroscedasticity is crucial for ensuring the robustness and reliability of the regression analysis.

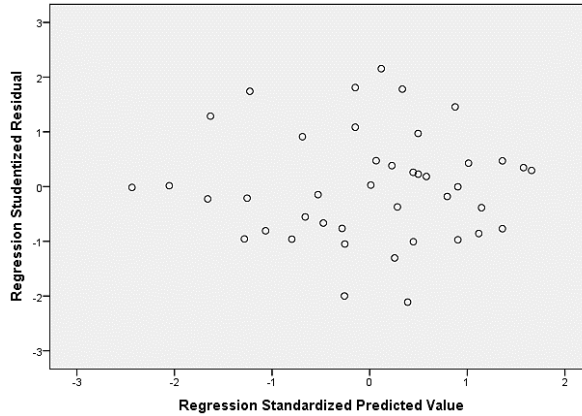


Figure 3. Scatterplot

In Figure 3, it can be observed that the scatterplot of points does not exhibit a distinct pattern or trend. Therefore, it can be concluded that no heteroscedasticity is present, or in other words, homoscedasticity is observed. Homoscedasticity indicates that the variance of the residuals is approximately constant across all levels of the independent variables, which is a desirable condition for regression analysis as it ensures the reliability of statistical inference and model predictions.

4.3. Hypothesis

4.3.1. Simultaneous Test (F-Test)

An F-test aims to determine the influence of the Learning Environment, Independence, and Student Discipline on Learning Outcomes by examining the calculated F-value. The results of this simultaneous testing provide insight into whether these independent variables collectively have a statistically significant impact on the dependent variable, Learning Outcomes.

Table 3. Simultaneous Analysis

Model	F	p-value
Regression	4.302	0.010
Residual		
Total		

Table 3 shows that the calculated F-value is 4.302, more significant than the F-table value of 2.85, and the p-value is 0.010, which is less than the significance level (α) of 0.05. Therefore, we can conclude that the null hypothesis (H_0) is rejected. In other words, the Learning Environment (x_1), Independence (x_2), and Student Discipline (x_3) simultaneously have a significant impact on student learning outcomes.

4.3.2. Partial Test (t-test)

A partial test is used to examine the individual effects of the Learning Environment (x_1) on Learning Outcomes (y), Independence (x_2) on Learning Outcomes (y), and Student Discipline (x_3) on Learning Outcomes (y) based on the calculated t-values.

Table 4 shows that the variable Learning Environment (x_1) has a calculated t-value of 2.281, more significant than the t-table value of 2.021, or a p-value of 0.028, less than the significance level (α) 0.05. Therefore, the null hypothesis (H_0) is rejected, indicating that the Learning Environment (x_1) has a significant effect on Learning Outcomes (y). Similarly, the variable Independence (x_2) has a t-value of 2.391, more significant than the t-table of 2.021, or a p-value of 0.022, less than α of 0.05. Thus, H_0 is rejected, indicating that Independence (x_2) significantly affects Learning Outcomes (y). The variable Student Discipline (x_3) has a t-value of 2.831, more significant than t-table of 2.021, or a p-value of 0.007, less than α of 0.05.

Table 4. Partial Test (t-test)

Model	t	p-value
(Constant)	1.953	0.058
Learning Environment (x_1)	2.281	0.028
Independence (x_2)	2.391	0.022
Student Discipline (x_3)	2.831	0.007

Consequently, H_0 is rejected, indicating that Student Discipline (x_3) significantly affects Learning Outcomes (y). After determining the results of the hypothesis tests simultaneously and partially, the multiple linear regression coefficients can be seen in Table 5.

Table 5. Multiple Linear Regression Coefficients

Variables	Unstandardized Coefficients		Standardized Coefficients Beta
	B	Std. Error	
(Constant)	15.820	8.101	
Learning Environment (x_1)	3.563	1.562	-4.777
Independence (x_2)	3.756	1.571	5.018
Student Discipline (x_3)	0.515	0.182	0.410

The regression equation is:

$$Y = 15.820 + 3.563 \cdot \text{Learning Environment} + 3.756 \cdot \text{Independence} + 0.515 \cdot \text{Student Discipline}$$

- Constant (Intercept): The intercept term is 15.820. This represents the predicted value of the dependent variable (y) when all independent variables (x_1, x_2, x_3) are zero.
- Learning Environment (x_1): For every one-unit increase in the Learning Environment score, the predicted value of the dependent variable (y) increases by 3.563 units. The standardized coefficient (Beta) indicates that the Learning Environment has a strong negative impact on the dependent variable, with a beta coefficient of -4.777.
- Independence (x_2): For every one-unit increase in the Independence score, the predicted value of the dependent variable (y) increases by 3.756 units. The standardized coefficient (Beta) indicates that Independence has a strong positive impact on the dependent variable, with a beta coefficient of 5.018.
- Student Discipline (x_3): For every one-unit increase in the Student Discipline score, the predicted value of the dependent variable (y) increases by 0.515 units. The standardized coefficient (Beta) indicates that Student Discipline has a moderate positive impact on the dependent variable, with a beta coefficient of 0.410.

4.4. Coefficient of Determination

The coefficient of determination, often represented as R-Square, indicates how well the independent variables explain the variability of the dependent variable. In this study, the Adjusted R-Square is used, which adjusts the R-Square value for the number of predictors in the model. This adjustment is necessary to account for the potential inflation of R-Square when multiple independent variables are included in the model.

Table 6. Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.504	0.254	0.195	4.254

In Table 6, the Adjusted R Square value is 0.195. This coefficient of determination indicates that Learning Environment, Independence, and Student Discipline collectively explain 19.5% of the variance in Academic Achievement. The remaining 80.5% of the variance is attributed to other factors not included in this study.

This suggests that while Learning Environment, Independence, and Student Discipline have some influence on Academic Achievement, their combined effect is relatively weak. Most of the variation in academic achievement is influenced by other variables not evaluated in this research. Therefore, further investigation into additional factors may be necessary to understand better and predict Academic Achievement more comprehensively.

4.5. Discussion

The research conducted at primary school, Luwu Regency, aimed to investigate the relationships between critical factors and student academic achievement. The study involved 42 student participants and utilized surveys to assess the learning environment, independence, and student discipline through descriptive analyses.

The findings underscored the significant influences of these factors on academic performance. Specifically, the Learning Environment was found to exert a notable impact, supported by a regression analysis yielding a t-value of 2.281 ($p < 0.05$). This suggests that a conducive and supportive learning environment enhances student learning outcomes. Independence among students significantly affected academic achievement, as indicated by a regression t-value of 2.391 ($p < 0.05$). This highlights the importance of fostering students' ability to take initiative, make independent decisions, and manage their learning processes effectively. Student Discipline emerged as another critical determinant of academic success, with a regression t-value of 2.831 ($p < 0.05$). Effective discipline helps students achieve academic goals and cultivates a structured approach to learning and personal responsibility.

These factors—Learning Environment, Independence, and Student Discipline—combined explained 19.5% of the variance in student academic achievement (Adjusted $R^2 = 0.195$). This suggests that while these factors are significant contributors, other variables likely influence the remaining 80.5% of variance not addressed in this study. The study highlights the pivotal roles of a supportive learning environment, student independence, and discipline in shaping student academic outcomes. These findings align with existing research, emphasizing the importance of creating environments that nurture student autonomy and provide structured support for effective learning and academic success. Further research could explore additional variables to provide a more comprehensive understanding of factors impacting student achievement in educational settings like primary school.

The findings revealed that the Learning Environment significantly affects student academic achievement. This aligns with the study by (Lizzio et al., 2002; Trigwell & Prosser, 1991), highlighting the pivotal role of a supportive learning environment in enhancing learning outcomes. According to (Usman & Madudili, 2019; Wu et al., 2010), the learning environment encompasses all elements present in the educational setting that can positively influence student learning and performance. In this study, the Learning Environment factor scored an average of 46.62, indicating a moderate but meaningful impact on academic achievement.

Independence was found to have a significant positive effect on student academic outcomes. This supports the research by (Van Soom & Donche, 2014), which emphasized the importance of student autonomy in learning. Independence in learning allows students to take responsibility for their learning process, make decisions independently, and solve problems effectively (Van Soom & Donche, 2014). In this study, the Independence factor achieved an average score of 46.52, suggesting its role in fostering a proactive approach to learning among students.

The research underscored the critical role of Student Discipline in shaping academic performance. Effective discipline helps achieve academic goals, instills responsibility, and fosters a conducive learning environment (Rahmawati et al., 2023). This finding is consistent with (Anderson et al., 2019), who highlighted the positive correlation between student discipline and academic achievement. The Student Discipline factor in this study scored an average of 29.90, indicating its impact despite variability in student disciplinary practices.

When considered together, Learning Environment, Independence, and Student Discipline collectively explained 19.5% of the variance in student academic achievement. This suggests that while these factors are significant, other unexplored variables contribute to the remaining 80.5% of the variance, as indicated by the Adjusted R² value.

The study's findings underscore the importance of creating a supportive learning environment, promoting student autonomy, and fostering discipline to enhance academic outcomes. Educators and policymakers should consider these factors when designing educational interventions to improve student achievement. Future research could delve deeper into additional variables influencing academic performance, such as parental involvement, teaching methods, and socioeconomic factors.

4. CONCLUSION

This primary school study demonstrates that the learning environment, independence, and student discipline significantly influence their academic achievement. A conducive learning environment, students' autonomy in managing their learning processes, and high levels of discipline collectively explain approximately 19.5% of the variation in students' academic performance. These findings underscore the importance of fostering a supportive learning environment, encouraging student initiative in learning, and promoting disciplined behavior to enhance academic outcomes. The implications highlight the need for developing more effective educational strategies in schools, while considering other factors that may affect student achievement.

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