



The Effect Of Self-Learning And Organizational Climate On The Academic Achievement Of Students At Matangkuli Public High School 1

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Abstract

Although crucial, previous studies have often examined self-directed learning and the institutional environment separately, leaving an empirical gap in understanding the dynamics between the two. In response to the low success rate in college admissions, this quantitative causal study analyzes the effects of self-directed learning and organizational climate on students' academic achievement at Matangkuli State High School 1. Using purposive and accidental sampling, data from 48 respondents were analyzed using multiple linear regression. The results show that self-directed learning has a partial, positive, and significant effect, whereas the organizational climate does not have a significant effect. However, when considered simultaneously, both factors had a significant effect, accounting for 15.9% of the variance. These findings confirm that self-directed learning can overcome suboptimal school environmental conditions. Therefore, institutional policies must shift from merely improving physical infrastructure toward developing an ecosystem of self-directed learning to enhance graduates' competitiveness in national university admissions.

Kata kunci:

Self Learning, Iklim
Organisasi, Prestasi
Akademik,
Kemandirian Belajar,
Literasi Siswa

Abstrak

Meskipun krusial, studi terdahulu sering mengkaji kemandirian belajar dan lingkungan institusi secara terpisah, menyisakan celah empiris dalam memahami dinamika keduanya. Merespons rendahnya kelulusan seleksi perguruan tinggi, penelitian kuantitatif kausal ini menganalisis pengaruh *self-learning* dan iklim organisasi terhadap prestasi akademik siswa di SMA Negeri 1 Matangkuli. Menggunakan *purposive* dan *accidental sampling*, data dari 48 responden dianalisis dengan Regresi Linier Berganda. Hasilnya menunjukkan *self-learning* secara parsial berpengaruh positif dan signifikan, sedangkan iklim organisasi tidak signifikan. Namun, secara simultan keduanya berpengaruh signifikan dengan daya determinasi 15,9%. Temuan ini mengonfirmasi bahwa kemandirian belajar mampu melampaui kondisi lingkungan sekolah yang kurang optimal. Oleh karena itu, kebijakan institusi harus bergeser dari sekadar perbaikan infrastruktur fisik menuju pengembangan ekosistem pembelajaran mandiri demi meningkatkan daya saing lulusan dalam seleksi nasional.

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INTRODUCTION

Academic achievement is the primary measure of success in secondary education, which plays a decisive role in students' futures and careers. Ideally, the education system is designed so that students can achieve optimal learning outcomes (Tucker, 2019). However, in reality, there are still many challenges on the ground, particularly regarding the low competitiveness of graduates in gaining admission to higher education institutions (Pramesti et al., 2024). In Aceh Province, there is a fact that requires serious attention: the graduation rate of students in the National Selection Based on Tests (SNBT) remains very low, having stagnated below 50% from 2021 through 2023. This low pass rate is closely linked to changes in the format of the national exam, which now places greater emphasis on Higher Order Thinking Skills (HOTS) and logical reasoning tests (Hasmy, 2025). This new exam format renders passive learning methods and mere memorization no longer effective (Jufri et al., 2023). Therefore, it is important to investigate the factors that influence students' learning success, particularly to address their literacy deficiencies and low analytical skills (Ulfa et al., 2025).

To be able to tackle these higher-order reasoning problems, students urgently need mental preparedness and self-directed learning (Arif et al., n.d.). Self-directed learning does not mean learning alone, but rather the student's initiative to plan, monitor, and evaluate their learning process independently (Mulyadi & Syahid, 2020). This sense of independence is demonstrated through students' ability to identify their learning needs, set goals, choose appropriate strategies, and consciously evaluate their progress (Mubarok, 2026). Independent students tend to be more proactive in seeking information from various sources rather than simply waiting for instructions from teachers. Evidence shows that students with a high level of self-directed learning demonstrate greater resilience and adaptability when facing complex analytical problems (Nasruuna et al., 2025).

In addition to student autonomy, support from the school environment or organizational climate also plays a crucial role (Núñez & León, 2015). A positive organizational climate such as good communication between teachers and staff, as well as solidarity among students can foster a sense of psychological safety (Aslam, 2024). This situation encompasses several crucial dimensions, ranging from the level of academic support provided by teachers and the quality of interactions among students to the adequacy of physical facilities that support the process of scientific exploration (Hidayat, 2025). This supportive environment encourages students to boldly explore new ideas, reduces anxiety, and enhances learning motivation. In line with the findings of (Isna et al., 2025) and (Aziz, 2024), improving students' reasoning skills requires a good combination of students' independent habits and a supportive school climate (Kurniawan, 2023).

Unfortunately, most previous studies have limitations because they examined internal and external factors separately (Laela, 2023) or focused solely on teachers' classroom teaching methods (Siti, 2025). Although recent literature from 2024–2026 has aggressively explored the role of digital learning tools and the general employability of graduates in the workforce (Pramesti et al., 2024), there remains a significant empirical gap regarding how internal psychological autonomy interacts with the school's macroclimate within a single analytical

framework. This is particularly true in public high schools facing the upheaval of changes to reasoning-based exam formats (Mulyono, 2020). The novelty of this study lies in simultaneously testing the effects of self-learning and organizational climate on academic achievement within a single analytical model to address this gap (Zhang & Liang, 2026). This study is focused on Matangkuli State High School No. 1. This school presents an interesting phenomenon to study because it is making strenuous efforts to transform its academic atmosphere so that students are more competitive in gaining admission to public universities, even though at the same time it still faces the challenge of varying levels of student learning autonomy (Fabricant & Brier, 2016). Therefore, this study is crucial to provide a foundation for data-driven solutions and recommendations for the school in designing strategies to improve the quality of its graduates.

In light of this context, the study's objectives are to test and evaluate empirically:

1. Self-learning's partial impact on pupils' academic performance
2. The impact of organisational atmosphere on students' academic performance
3. The concurrent impact of organisational culture and self-learning on academic performance at Matangkuli State High School 1.

METHODS

This study looks at the cause-and-effect relationship between variables using a quantitative method. Due to limitations in directly reaching the entire population, this study is designed as a preliminary study to test the influence of variables, rather than to draw absolute conclusions for the entire population (Mamuaya et al., 2025). The research location was Matangkuli State High School No. 1, and data collection took place from April through May 2026.

All 514 enrolled students of Matangkuli State High School No. 1 made up the study population. Purposive and accidental sampling strategies were combined to select the sample online. However, because this study required students who had gone through more phases of academic evaluation, the subject criteria were limited to 12th-grade (third-year) students, totaling 167 students.

The objective was to select respondents who truly met the research criteria (purposive) namely active 12th-grade students who have a complete report card and internet access, while also collecting data from students who happened to be willing and easily accessible online (accidental). Through this process, a sample of 48 respondents was collected.

Although the number is limited, this sample of 48 respondents is valid and suitable for analysis using linear regression. This suitability is based on two fundamental statistical rules. First, this number exceeds the minimum threshold of 30 samples required for regression testing. Second, this number meets the criterion for sample adequacy, which is at least 10 times the number of research variables (Jodius, 2021). Since this study uses three main variables, the minimum threshold of 30 respondents has been well met.

Data collection utilized a closed-ended Likert-scale questionnaire to measure self-learning and organizational climate, as well as report card records to measure academic achievement (Refi, 2021). The Likert scale was used to convert students' responses into numeric values that could be statistically analyzed. Before distribution, the questionnaire underwent validity testing to ensure the questions were on target, and reliability testing to ensure the questionnaire remained consistent when used repeatedly.

Finally, the data were analyzed using multiple linear regression with SPSS (Sulianta, n.d.). The first step was to clean the questionnaire and report card data. After that, prerequisite tests (classical assumption tests) were conducted, namely a normality test to ensure the data were normally distributed, and a multicollinearity test to ensure that no independent variables overlapped with one another. Once all requirements were met, the analysis proceeded to hypothesis testing to determine the extent of the influence of self-learning and organizational climate on students' academic achievement, both individually (partially) and collectively (simultaneously).

RESULT

1. Classical Assumption Tests

Before conducting hypothesis testing, all research data underwent prerequisite tests (classical assumption tests). The purpose was to ensure that the regression analysis model used was accurate, unbiased, and statistically valid.

1.1. Normality Test

The normality test in this study used the Shapiro-Wilk method to determine whether the residual values were normally distributed.

Table 1. Summary of Classical Assumption Test Results

Description	Value	Criteria	Decision
Sample Size (N)	48	–	–
Shapiro–Wilk Significance (Sig.)	0.069	Sig. > 0.05	Normally Distributed

It is clear from Table 1 that 48 respondents made up the research sample. 0.069 was the significance value (Sig.). It can be inferred that the data in this regression model are normally distributed as this significance value is higher than the critical criterion of 0.05 ($0.069 > 0.05$).

1.2. Multicollinearity Test

The multicollinearity test aims to ensure that there is no high correlation or overlap among the independent variables in the model.

Table 2. Results of the Multicollinearity Test

Independent Variable	Tolerance	VIF	Notes
Self-Learning (X₁)	0.821	1.217	Free of Multicollinearity
Organizational Climate (X₂)	0.821	1.217	Free of Multicollinearity

Based on Table 2, the Tolerance values for both variables were 0.821 (> 0.10) and the Variance Inflation Factor (VIF) was 1.217 (< 10). This confirms that there were no issues of multicollinearity or overlapping correlations among the independent variables.

2. Hypothesis Testing Results (Multiple Linear Regression)

Hypothesis testing was conducted to determine the extent of the influence of the Self-Learning (X₁) and Organizational Climate (X₂) variables on Academic Achievement (Y), both individually (partially) and collectively (simultaneously). Based on the data analysis results, the breakdown of the testing for the three hypotheses is as follows:

2.1. The Effect of Self-Learning (X₁) on Academic Achievement (Y)

This test aims to determine whether individual self-learning independently influences students' academic achievement. The results of the partial test (t-test) are shown in the following table:

Table 3. Results of the Partial Test (t-Test) for the Self-Learning Variable

Variable	t-value	Sig.	Notes
Self-Learning (X₁)	2.726	0.009	Significant (Accepted)

A significance value of 0.009 was determined based on Table 3. The First Hypothesis is accepted since the significance value of 0.009 is less than 0.05. This suggests that pupils' academic performance at Matangkuli State High School 1 is significantly impacted by self-learning. The more adept pupils are in finding their own learning resources on their own, the better their academic performance will be.

2.2. The Effect of Organizational Climate (X₂) on Academic Achievement (Y)

This test was conducted to examine the partial effect of the school environment on student achievement.

Table 4. Results of the Partial Test (t-Test) for the Organizational Climate Variable

Variable	t-value	Sig.	Notes
Organizational Climate (X₂)	0.362	0.719	Not Significant (Rejected)

Based on Table 4, a significance value of 0.719 was obtained. Since the significance value of 0.719 is greater than 0.05, the Second Hypothesis is rejected. This finding demonstrates that organizational climate does not have a significant partial effect on academic achievement. For students at Matangkuli State High School 1, support in the form of facilities or external communication from the school is not a primary determinant of their report card grades when tested separately.

3. The Simultaneous Effect of Self-Learning (X1) and Organizational Climate (X2)

This test examines the combined effect of internal (self-learning) and external (organizational climate) factors on academic achievement through an F-test.

Table 5. Results of the Simultaneous Test (F-Test)

Model	F-value	Significance (Sig.)	Conclusion
Regression (X₁ & X₂)	4.244	0.020	Significant

Based on Table 5, the calculated F-value is 4.244 with a significance level of 0.020. Since the significance level of 0.020 is less than 0.05, the Third Hypothesis is accepted. These results indicate that the variables Self-Learning and Organizational Climate simultaneously have a significant effect on Academic Achievement.

The extent to which these two independent variables contribute to academic achievement can be determined from the coefficient of determination (R^2) values presented in Table 6 below.

Table 6. Coefficient of Determination (R^2) Result

Model	R-squared (R^2)
1	0.159

The R-squared value of 0.159 in Table 6 indicates that the combined factors of Self-Learning and Organizational Climate account for 15.9% of the variation in student grades at Matangkuli State High School 1. Meanwhile, the remaining 84.1% is influenced by factors outside the scope of this study (such as family economic status or social environment).

DISCUSSION

1. The Effect of Self-Learning on Academic Achievement

Based on the results of the partial tests in this study, the level of self-directed learning was found to have a highly significant positive effect on students' academic achievement, with a significance value of 0.009. This statistical figure confirms that a student's academic success does not depend solely on the teacher's instruction in the classroom, but rather on their internal motivation. Students who are independent and proactive in planning, monitoring, and exploring various sources of material on their own have been shown to tend to achieve far better results.

These empirical findings are particularly crucial and relevant to the current dynamics of secondary education, especially in preparing students for the National Test-Based Selection (SNBT). Given that the format of the national exam has now shifted to place greater emphasis on logical reasoning tests, passive learning methods that rely solely on memorization are no longer effective (Sulianta, n.d.). Therefore, independent learning has now become a cornerstone for developing the literacy and critical thinking skills essential for navigating the rigorous selection process for public universities. This aligns with Sulianta's research, which emphasizes that intrinsic motivation—the drive to learn from within—is an absolute prerequisite for academic success. Students with strong learning autonomy will become accustomed to solving problems independently, giving them greater resilience and adaptability when faced with complex analytical questions.

From a psychological perspective, the phenomenon of high academic achievement among self-directed students can be comprehensively explained through Self-Determination Theory. When students possess a high degree of autonomy in self-directed learning, a fundamental shift in their mindset occurs, whereby they begin to internalize the learning process as a meaningful personal need, rather than merely an obligation or an external burden imposed by the school. This shift in perspective directly leads to increased cognitive resilience and far deeper information-processing skills. Such mental mechanisms are vital in equipping students to solve Higher-Order Thinking Skills (HOTS) problems, which absolutely require the ability to independently apply logical deduction rather than relying solely on memory or passive memorization.

2. The Influence of Organizational Climate on Academic Performance

Conversely, a partial test of the organizational climate variable actually demonstrated that this factor does not have a significant effect on students' academic achievement, as indicated by a significance value of 0.719. Although at first glance this statistical finding may seem paradoxical or puzzling, an in-depth psychological analysis confirms that this outcome is entirely rational. For students at Matangkuli State High School No. 1, the availability of physical facilities and the patterns of external communication established by the school are not the primary determinants driving their report card grades. This indicates that students' reliance on external environmental factors is not as strong as their personal drive in the context of achieving academic success.

This further demonstrates that students who have a solid foundation of independent learning will always be able to maintain their academic performance and proactively find solutions to learning obstacles, even if school facilities or support are not yet optimal. Intrinsic motivation, which grows from within the student, has proven to be a far stronger and more sustainable driving force compared to extrinsic motivation that stems solely from the school environment. These empirical findings are clearly consistent with and support the theory proposed by (Sulianta, n.d.), which asserts that the organizational climate of an educational institution often has no significant direct impact if the students within it are already endowed with a high level of resilience, independence, and mental discipline from within themselves.

Furthermore, when examined through a structural-educational lens, the absence of this significant partial effect implies that a positive school climate or impressive infrastructure essentially serves only as a passive supporting framework. Without being accompanied by an active catalyst in the form of self-directed learning initiatives originating from within each student, no matter how excellent the physical facilities may be or how warm and supportive the school's communication is, these factors will not automatically translate into high academic achievement reflected on report cards. Moreover, within today's high-stakes, exam-oriented educational landscape, proximal variables—such as students' internal motivation and determination—are capable of fully offsetting, and even surpassing, the role of distal variables like the school's external climate when their respective influences are tested independently.

3 . Simultaneous Effects and Implications for Schools

Although partial tests indicated that the school climate did not have a dominant effect, the results of the simultaneous tests actually confirmed a different operational reality. Joint regression analysis demonstrates that the interaction between self-directed learning and organizational climate has a positive and significant effect on students' academic achievement, as evidenced by a p-value of 0.020. Statistically, the combination of these two variables accounts for 15.9% of the variation in students' academic performance at this school. The remaining 84.1% can be explained by various other determinants outside the scope of this research model, such as family socioeconomic status, parenting styles, and the dynamics of students' daily social environments.

These comprehensive findings, in turn, carry critical managerial and strategic implications for policymakers at Matangkuli State High School No. 1. The fact that the synergy between student learning autonomy and the support of the school ecosystem remains essential underscores the need for a serious reorientation of the institution's program focus. . School administrators are urged to immediately evaluate and reformulate their strategic plans, given that the academic challenges students currently face require a far more adaptive approach.

More specifically, the allocation of educational funds and the formulation of school policies should no longer be devoted solely to the repair or expansion of physical infrastructure. Instead, the design of school facilities and the school environment must be carefully engineered and directed so that they can be transformed into incubators that effectively stimulate and foster students' independent learning initiatives. By establishing the development of self-learning character as the primary goal of education, and positioning a conducive school climate as its supporting catalyst, these institutions are projected to operate far more effectively. Ultimately, this kind of holistic strategy will optimize the school's capacity to produce a generation of graduates who are resilient, possess high cognitive resilience, and are fully prepared to conquer the challenges of nationwide analytical reasoning-based exams.

Conclusion

This study answers the central research question by demonstrating that, although internal autonomy and the external school climate collectively promote academic achievement, the primary driver of student success lies in individual self-directed learning. This intrinsic

motivation has proven to be the key to students' graduation and their perseverance in learning. This strong sense of autonomy enables students to continue to excel even though the school's organizational climate, when considered individually (in isolation), does not have a significant impact on their grades. Theoretically, this finding shifts the educational paradigm from an infrastructure-centric model to a learner-centric model, demonstrating that limitations in the school environment can be overcome through strong cognitive resilience.

Based on these conclusions, schools are advised to shift the focus of their policies. School interventions should not only focus on improving physical facilities but must also be directed toward creating programs that encourage students to become accustomed to independent learning and to explore literacy. As a concrete step, schools must structurally integrate self-directed learning modules—such as independent critical thinking workshops and logic-based literacy circles—outside of formal class hours to optimize students' readiness for national selection exams.

Given that there are still many other factors outside the scope of this study that influence academic achievement (accounting for 84.1%), further research is strongly recommended to examine additional variables. Some factors worth further investigation include the influence of parenting styles or the use of digital technology (such as artificial intelligence, or AI) in students' learning routines. This is important for refining strategies to improve graduate quality so that they are more comprehensive.

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