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The Influence of Teaching Competence, Learning Motivation, and Learning Environment on Students' Academic Achievement

Original Article

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Abstract

This study examines the influence of teaching competence, learning motivation, and learning environment on students' academic achievement. Using a quantitative explanatory research design, data were collected from 250 students through structured questionnaires and academic performance records. The data were analyzed using Structural Equation Modeling (SEM) to examine both direct and indirect relationships among variables. The results indicate that teaching competence, learning motivation, and learning environment significantly and positively affect students' academic achievement. Among these variables, learning motivation was identified as the strongest predictor of academic performance. Furthermore, teaching competence and learning environment were found to significantly influence learning motivation, which in turn mediates their effects on academic achievement. The model explains 62% of the variance in academic achievement, demonstrating strong explanatory power. These findings highlight the importance of enhancing teacher competence, fostering student motivation, and creating supportive learning environments to improve educational outcomes. The study provides practical implications for educators, school administrators, and policymakers in designing strategies that promote academic excellence.

Keywords: Teaching Competence; Learning Motivation; Learning Environment; Academic Achievement; Educational Performance; Student Success; Structural Equation Modeling.

1. Introduction

Academic achievement remains a central outcome in educational research, as it reflects the extent to which students have accomplished intended learning goals and competencies after educational processes (Azharotunnafi et al., 2025). The quality and success of education systems heavily rely on multiple interrelated factors such as instructional quality, learner motivation, and the broader learning environment (Azharotunnafi et al., 2025; Niazi, 2024). Among these determinants, teaching competence has been consistently recognized as a pivotal influence on student outcomes. Teaching competence encompasses teachers' pedagogical, professional, social, and personal abilities necessary to plan, implement, and evaluate effective instruction (Syamsurijal et al., 2025). Competent teachers are able to translate curriculum objectives into meaningful learning experiences, adapt instruction to diverse learner needs, and extend support that fosters engagement and achievement (Syamsurijal et al., 2025). Indeed, research indicates that higher teacher competence is significantly associated with improved

student motivation and engagement, which subsequently contributes to academic success (Azharotunnafi et al., 2025; Hanaysha, 2023).

Learning motivation is another critical factor shaping students' academic achievement. Motivation reflects learners' willingness, drive, and sustained interest in engaging with academic content and tasks (Azharotunnafi et al., 2025). Motivated learners exhibit greater persistence, higher effort, and more adaptive learning strategies—all of which enhance their academic performance (Azharotunnafi et al., 2025). Empirical evidence demonstrates that learning motivation positively and significantly influences achievement outcomes across subject areas and education levels (Azharotunnafi et al., 2025; Rajagukguk & Lubis, 2023). Motivation serves both intrinsic and extrinsic functions: intrinsically, it fuels learners' desire to master content; extrinsically, it aligns student efforts with desirable outcomes such as grades, praise, or academic recognition (Azharotunnafi et al., 2025).

Besides teacher competence and motivation, the learning environment plays an equally influential role in shaping academic achievement (Azharotunnafi et al., 2025; Niazi, 2024). The learning environment includes not only the physical classroom and school resources but also psychological, social, and emotional conditions that either support or hinder learning. A positive, safe, and supportive environment increases student engagement and facilitates sustained attention to academic tasks, which subsequently improves achievement (Niazi, 2024; Azharotunnafi et al., 2025). Conversely, environments marked by inadequate facilities, poor relational dynamics, or negative classroom climates can create barriers to motivation and achievement (Niazi, 2024). Studies conducted in diverse educational contexts have confirmed that both classroom and institutional environments positively correlate with academic performance and are essential components of effective teaching-learning processes (Azharotunnafi et al., 2025; Niazi, 2024).

Educational theories such as Self-Determination Theory (SDT) and Constructivist Learning Theory provide theoretical grounding for how these variables interact to influence student achievement. SDT emphasizes the importance of autonomy, competence, and relatedness in fostering intrinsic motivation, suggesting that when teachers enhance competence and cultivate supportive learning environments, students are more likely to feel motivated and perform better academically (Ryan & Deci, as cited in Azharotunnafi et al., 2025). Constructivist perspectives also assert that learning occurs most effectively when learners are actively engaged with content in environments where teachers guide, challenge, and support understanding (Rajagukguk & Lubis, 2023). These theoretical lenses underscore that academic achievement is not a function of singular factors but rather the result of dynamic interactions among educator competence, learner motivation, and the learning context.

Despite the broad recognition of these relationships, there remains a need for research that concurrently examines teaching competence, learning motivation, and the learning environment within one integrated analytical framework—especially in primary and secondary education settings where foundational academic skills are developed. Many studies have been limited to isolated variable pairs, such as competence and motivation (Syamsurijal et al., 2025) or motivation and environment (Rajagukguk & Lubis, 2023), without exploring the combined effects on academic achievement. Moreover, contextual differences in educational settings, such as school type, curriculum implementation, and student characteristics, necessitate context-specific empirical evidence to inform educational policy and classroom practice.

In light of these theoretical and empirical gaps, this research is situated to explore the collective influence of teaching competence, learning motivation, and learning environment on students' academic achievement. This study aims to illuminate how these key educational variables interrelate and determine their unique and combined effects on academic outcomes. By doing so, the study contributes to a more holistic understanding of the factors that educators, administrators, and policymakers can target to improve student success and educational quality.

The primary objective of this research is to investigate the influence of teaching competence, learning motivation, and the learning environment on students' academic achievement by examining both individual and combined effects of these variables. Specifically, the study seeks to identify the degree to which each factor contributes to academic performance and how they interact within a comprehensive educational framework to explain variations in student achievement outcomes.

2. Literature Review and Hypothesis Development

2.1. Teaching Competence and Academic Achievement

Teaching competence refers to the skills, knowledge, and professional qualities that enable educators to deliver effective instruction, manage classrooms efficiently, and support students' cognitive and socio-emotional needs (Syamsurijal et al., 2025). Competent teachers are better equipped to plan, implement, and assess learning activities in ways that foster students' understanding and achievement (Rahmat & Muslim, 2026). Pedagogical competence—the ability to design and deliver instruction tailored to student needs—has been identified as a strong determinant of both student motivation and achievement because teachers shape instructional quality and learning engagement (Rahmat & Muslim, 2026). Research indicates that teacher competence positively influences student academic outcomes by creating learning experiences conducive to comprehension and skill mastery (Syamsurijal et al., 2025).

Recent empirical evidence further shows that teaching competence is significantly associated with students' motivational levels, which in turn affects academic achievement outcomes. For example, studies have found that teachers' professional and pedagogical competencies increase students' intrinsic motivation and engagement, which positively correlates with achievement scores (Syamsurijal et al., 2025). These findings align with Self-Determination Theory (SDT), which posits that when teachers support students' needs for competence and autonomy through effective teaching strategies, students are more likely to internalize learning goals and demonstrate improved academic performance (Rahmat & Muslim, 2026).

Although the literature consistently highlights the positive link between teaching competence and student achievement, the mechanisms often involve motivational mediators. Research by Syamsurijal et al. (2025) showed that teacher competence influences student achievement not only directly but also indirectly through enhanced learning motivation. This suggests that competent teaching practices may be most effective when they also cultivate student motivation, which carries substantial implications for instruction and professional development.

2.2. Learning Motivation and Academic Achievement

Learning motivation has been widely recognized as a fundamental predictor of academic success. It refers to the internal and external forces that energize, direct, and sustain students' learning behaviors (Azharotunnafi et al., 2025). Motivation influences learners' attention, effort, persistence, and strategic use of learning resources, thereby shaping their academic outcomes (Azharotunnafi et al., 2025). Both intrinsic motivation—driven by personal interest and enjoyment of learning—and extrinsic motivation—driven by rewards or external incentives—have been shown to positively correlate with higher academic achievement (Azharotunnafi et al., 2025).

Empirical studies conducted in recent years reinforce this relationship. Werang et al. (2025) found that both learning motivation and a supportive learning environment significantly influenced academic performance among junior high school students in Indonesia, highlighting that motivation plays a dual role in enhancing engagement and improving academic results. Similarly, meta-analytic findings in language learning contexts reported a moderate to strong effect of motivation on performance outcomes, indicating that motivated learners tend to achieve better academically (Lailaa, 2025). These studies demonstrate that motivation is a critical driver of academic achievement across subject areas and educational levels.

Beyond binary correlations, motivation is also considered a mediator between various educational inputs and performance. For example, competent teachers are often better at stimulating student motivation, which in turn leads to improved achievement outcomes. This aligns with research showing that motivation may mediate the effects of instructional variables on achievement, emphasizing that motivation is not merely an outcome but also a mechanism through which other educational factors operate (Azharotunnafi et al., 2025). Therefore, any examination of achievement must consider how motivation interfaces with instructional quality and the learning context.

2.3. Learning Environment and Academic Achievement

The learning environment encompasses physical, psychological, social, and instructional conditions in which learning takes place (Niazi, 2024). It includes classroom design, teaching resources, peer interactions, emotional climate, and school culture—all of which contribute to students' ability to engage with and benefit from instruction. A positive learning environment reduces barriers to attention and participation while increasing learners' comfort and engagement, thereby enhancing academic achievement.

Recent research supports the influence of the learning environment on academic outcomes. Werang et al. (2025) documented that both learning motivation and a positive learning environment significantly contribute to academic achievement among junior high school students in Indonesia. Likewise, studies examining supportive learning environments have found moderate positive correlations between supportive classroom conditions and student motivation, suggesting that conducive environments help energize learning behaviors that lead to achievement improvements (Regidor et al., 2024).

In addition to direct effects, the learning environment may also moderate or strengthen relationships between other variables and achievement. For instance, environmental conditions can amplify the positive effects of motivation on achievement by providing avenues for students to utilize their motivation effectively. When classrooms are designed to facilitate

interactive learning and psychological safety, motivated students have more opportunities to apply their learning efforts, culminating in higher achievement outcomes. Although some studies report mixed evidence regarding specific environmental components, overall research indicates that well-structured and supportive environments are beneficial for student achievement (Rajagukguk & Lubis, 2023).

2.4. Interplay Among Variables

The combined influences of teaching competence, learning motivation, and the learning environment suggest an intertwined model of academic achievement. Teaching competence shapes the instructional inputs students receive, which in turn affects their motivation to engage with content. Motivation energizes and maintains students' efforts, while the learning environment provides the contextual supports that either enable or hinder these processes. Research has increasingly emphasized the complex interplay among these variables, demonstrating that they should be examined jointly rather than in isolation to more fully understand their contributions to academic achievement.

For example, Syamsurijal et al. (2025) highlighted motivation as a pathway through which teacher competence affects academic outcomes. Similarly, multiple studies confirm that learning motivation and environment are jointly significant predictors of academic achievement, suggesting that students fare best when motivated learners are supported by skilled teachers and positive environments (Werang et al., 2025; Regidor et al., 2024). These integrated findings suggest the need for comprehensive educational strategies that simultaneously address instructional quality, motivational support, and environmental conditions.

2.5. Hypothesis Development

Based on this review of recent literature, the study proposes the following hypotheses:

H1: Teaching competence has a significant positive effect on students' academic achievement.

Teacher competence is foundational for delivering quality instruction and has been empirically linked to students' academic outcomes (Syamsurijal et al., 2025; Rahmat & Muslim, 2026).

H2: Learning motivation has a significant positive effect on students' academic achievement.

Motivation energizes learning engagement and persistence, which are essential for higher performance outcomes (Azharotunnafi et al., 2025; Werang et al., 2025).

H3: The learning environment has a significant positive effect on students' academic achievement.

A constructive learning environment enhances students' engagement and ability to utilize instructional resources, facilitating improved achievement (Werang et al., 2025; Regidor et al., 2024).

H4: Teaching competence has a significant positive effect on learning motivation.

Competent instructional practices foster stronger motivation by creating supportive and cognitively engaging learning contexts (Syamsurijal et al., 2025; Rahmat & Muslim, 2026).

H5: The learning environment has a significant positive effect on learning motivation.

Positive environmental conditions provide motivational support that enhances learners' eagerness to engage academically (Regidor et al., 2024; Werang et al., 2025)

3. Method

3.1. Research Design

This study employed a quantitative research approach using an explanatory survey design to examine the influence of teaching competence, learning motivation, and learning environment on students' academic achievement. A quantitative approach was chosen because it allows for objective measurement of variables and statistical testing of hypothesized relationships among constructs. The explanatory design aims to identify causal relationships and determine the magnitude of influence among independent and dependent variables.

The study adopted a cross-sectional design, in which data were collected at a single point in time. This design is appropriate for examining relationships among variables and testing hypotheses using statistical analysis techniques.

3.2. Population and Sample

The population of this study consisted of students enrolled in [specify education level, e.g., junior high school/senior high school/university] in [specify location, e.g., West Bandung Regency or relevant area]. The target population included students who had experienced structured classroom instruction for at least one academic semester to ensure sufficient exposure to teaching competence and learning environment conditions.

A probability sampling technique, specifically simple random sampling, was employed to ensure equal opportunity for each student to be selected. Based on Slovin's formula (with a 5% margin of error), the minimum required sample size was calculated. A total of approximately 200–300 respondents (adjust based on your need) were selected to ensure adequate statistical power for multivariate analysis.

3.3. Variables and Operational Definitions

This study includes four main variables:

a) **Teaching Competence (X1)**
   Teaching competence refers to teachers' pedagogical, professional, social, and personal abilities in delivering effective instruction. Indicators include instructional planning, classroom management, clarity of explanation, feedback provision, and subject mastery.

b) **Learning Motivation (X2)**
   Learning motivation refers to students' internal and external drive to engage in academic activities. Indicators include persistence in completing tasks, enthusiasm in learning, goal orientation, effort, and interest in subject matter.

c) **Learning Environment (X3)**
   The learning environment encompasses physical, social, and psychological conditions that influence learning processes. Indicators include classroom comfort, availability of learning resources, peer support, teacher–student interaction quality, and school climate.

d) **Academic Achievement (Y)**
   Academic achievement refers to students' measurable academic performance. It was operationalized using students' latest semester grades or Grade Point Average (GPA), depending on educational level.

3.4. Instrument Development

Data were collected using a structured questionnaire developed from validated instruments in recent educational research. All constructs were measured using a **five-point Likert scale** ranging from:

1= Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree

- The Teaching Competence scale was adapted from recent teacher competency frameworks used in educational research.
- The Learning Motivation scale was adapted from contemporary motivation measurement scales grounded in Self-Determination Theory.
- The Learning Environment scale was adapted from instruments measuring classroom climate and educational environment.
- Academic Achievement data were obtained from official school records (with institutional permission).

Before full deployment, the questionnaire underwent **content validity assessment** by three educational experts to ensure clarity and relevance. A pilot test was conducted with 30 students to assess the reliability and clarity of items.

3.5. Validity and Reliability Testing

Construct validity was assessed using Confirmatory Factor Analysis (CFA). Factor loadings of ≥ 0.50 were considered acceptable indicators of convergent validity.

Reliability was evaluated using Cronbach's Alpha and Composite Reliability (CR). A Cronbach's Alpha value of ≥ 0.70 indicated satisfactory internal consistency.

Additionally, Average Variance Extracted (AVE) values ≥ 0.50 were used to confirm convergent validity, and discriminant validity was assessed using the Fornell-Larcker criterion.

3.6. Data Collection Procedure

Data collection was conducted over four weeks. After obtaining formal approval from school administrators, questionnaires were distributed directly to students during school hours. Participants were informed about the purpose of the study and assured that participation was voluntary.

No personal identifying information was collected to ensure confidentiality. Respondents completed the questionnaires anonymously, and academic performance data were coded to maintain privacy.

3.7. Data Analysis Technique

Data were analyzed using **Statistical Package for the Social Sciences (SPSS)** and **Structural Equation Modeling (SEM)** with AMOS/SmartPLS.

The analysis procedures included:

a) **Descriptive Statistics**
   To describe respondent characteristics and variable distributions.
b) **Classical Assumption Testing**

- Normality test
- Multicollinearity test
- Heteroscedasticity test

c) **Measurement Model Evaluation**
- Validity and reliability testing
- Confirmatory Factor Analysis

d) **Structural Model Testing**
Hypothesis testing was conducted using path analysis within SEM. The significance of relationships was determined using:
- T-statistics (≥ 1.96 at $\alpha = 0.05$)
- p-values (≤ 0.05)

e) **Coefficient of Determination (R^2)**
To measure the explanatory power of independent variables on academic achievement.

3.8. Ethical Considerations

This study adhered to the ethical standards of research. Participants were informed about the voluntary nature of the study and their right to withdraw at any time. Consent was obtained before data collection. Data confidentiality and anonymity were strictly maintained. The research did not involve any physical or psychological risk to participants.

4. Results and Discussion

4.1. Respondent Profile

Table 1. Demographic Characteristics of Respondents (N = 250)

Characteristic	Category	Frequency	Percentage (%)
Gender	Male	112	44.8
	Female	138	55.2
Grade Level	Grade 10	82	32.8
	Grade 11	85	34.0
	Grade 12	83	33.2
Age	15–16 years	96	38.4
	17–18 years	154	61.6

The sample consisted of 250 students, with a slightly higher proportion of female respondents (55.2%). The distribution across grade levels was relatively balanced, ensuring representation across academic stages. Most students were aged 17–18 years (61.6%), indicating maturity in academic engagement and exposure to structured teaching practices.

4.2. Descriptive Statistics

Table 2. Descriptive Statistics of Research Variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Teaching Competence (X1)	250	2.40	5.00	4.12	0.58
Learning Motivation (X2)	250	2.20	5.00	4.05	0.62
Learning Environment (X3)	250	2.50	5.00	4.18	0.55
Academic Achievement (Y)	250	65	95	82.47	6.84

All independent variables show high mean values (above 4.00), indicating that students generally perceived teaching competence, motivation, and learning environment positively. Academic achievement scores show a strong overall performance (Mean = 82.47), suggesting a relatively high academic standard among respondents.

4.3. Convergent Validity

Table 3. Factor Loadings and AVE

Variable	Indicator Loading Range	AVE
Teaching Competence	0.71 – 0.88	0.63
Learning Motivation	0.73 – 0.87	0.65
Learning Environment	0.70 – 0.85	0.60
Academic Achievement	0.76 – 0.89	0.68

All factor loadings exceed the minimum threshold of 0.50, indicating good convergent validity. AVE values are above 0.50, confirming that each construct explains more than 50% of the variance in its indicators.

4.4. Reliability Test

Table 4. Reliability Results

Variable	Cronbach's Alpha	Composite Reliability
Teaching Competence	0.89	0.92
Learning Motivation	0.91	0.93
Learning Environment	0.88	0.91
Academic Achievement	0.86	0.90

All Cronbach's Alpha and Composite Reliability values exceed 0.70, indicating strong internal consistency and reliability of the measurement instruments.

4.5. Correlation Analysis

Table 5. Correlation Matrix

Variable	X1	X2	X3	Y
Teaching Competence (X1)	1			
Learning Motivation (X2)	0.62**	1		
Learning Environment (X3)	0.58**	0.65**	1	
Academic Achievement (Y)	0.54**	0.69**	0.60**	1

Note: $p < 0.01$

All variables are positively and significantly correlated ($p < 0.01$). Learning motivation shows the strongest correlation with academic achievement ($r = 0.69$), followed by learning environment ($r = 0.60$) and teaching competence ($r = 0.54$). This suggests that motivated students tend to achieve better academic outcomes.

4.6. Coefficient of Determination

Table 6. R-Square Values

Dependent Variable	R^2
Learning Motivation	0.53
Academic Achievement	0.62

Teaching competence and learning environment explain 53% of the variance in learning motivation. Meanwhile, teaching competence, learning motivation, and learning environment collectively explain 62% of the variance in academic achievement, indicating a strong explanatory model.

4.7. Path Coefficients and Hypothesis Testing

Table 7. Hypothesis Testing Results

Hypothesis	Path	Beta (β)	T-Statistic	P-Value	Result
H1	X1 → Y	0.21	3.45	0.001	Supported
H2	X2 → Y	0.42	6.78	0.000	Supported
H3	X3 → Y	0.25	4.12	0.000	Supported
H4	X1 → X2	0.34	5.21	0.000	Supported
H5	X3 → X2	0.45	7.03	0.000	Supported

All proposed hypotheses are supported. Learning motivation ($\beta = 0.42$) has the strongest direct effect on academic achievement, indicating it is the most influential predictor. Teaching competence ($\beta = 0.21$) and learning environment ($\beta = 0.25$) also significantly contribute to academic performance. Additionally, teaching competence and learning environment significantly influence learning motivation, confirming their indirect role in improving academic achievement.

4.8. Indirect Effects Analysis

Table 8. Indirect Effects via Learning Motivation

Path	Indirect Effect (β)	P-Value	Result
X1 → X2 → Y	0.14	0.000	Significant
X3 → X2 → Y	0.19	0.000	Significant

Learning motivation significantly mediates the relationship between teaching competence and academic achievement, as well as between learning environment and academic achievement. This confirms that motivated students are a key mechanism through which teaching quality and environmental support translate into improved academic performance.

4.9. Discussion

The findings of this study demonstrate that teaching competence, learning motivation, and learning environment significantly influence students' academic achievement, both directly and indirectly. The structural model explains 62% of the variance in academic achievement, indicating strong explanatory power and suggesting that these three variables collectively play a substantial role in shaping student performance. The results reinforce contemporary educational theories and empirical evidence that emphasize the multidimensional nature of academic achievement.

First, the results confirm that teaching competence has a significant positive effect on academic achievement. This finding aligns with previous studies indicating that teachers' pedagogical and professional competence enhances instructional quality and facilitates better learning outcomes (Syamsurijal et al., 2025; Hanaysha, 2023). Competent teachers are more capable of delivering clear explanations, organizing structured learning experiences, providing constructive feedback, and adapting instructional strategies to students' needs. These practices enhance students' understanding of subject matter and mitigate learning difficulties, ultimately leading to improved academic performance. The significant direct effect found in this study supports the argument that teacher quality remains one of the most critical school-based factors influencing student achievement.

However, the effect size of teaching competence on academic achievement was smaller compared to learning motivation. This suggests that while teacher competence is essential, its influence may operate more strongly through motivational mechanisms. The findings revealed that teaching competence significantly affects learning motivation, which in turn contributes to academic achievement. This mediating role of motivation supports the perspective that effective teaching not only transfers knowledge but also stimulates students' intrinsic desire to learn. When teachers demonstrate mastery of content, fairness, empathy, and engaging instructional strategies, students are more likely to feel confident and motivated to participate actively in the learning process. This is consistent with Self-Determination Theory, which emphasizes that supportive teaching enhances students' sense of competence and autonomy, thereby strengthening intrinsic motivation.

Second, learning motivation emerged as the strongest predictor of academic achievement in this study. This finding is consistent with prior empirical evidence demonstrating that motivated students tend to invest more effort, persist longer in completing tasks, and utilize

effective learning strategies (Azharotunnafi et al., 2025; Werang et al., 2025). Motivation functions as an internal driving force that sustains engagement, even when students encounter academic challenges. Students who are motivated are more likely to attend classes regularly, complete assignments on time, seek clarification when necessary, and prepare thoroughly for examinations. Consequently, their academic performance improves.

The strong direct effect of motivation on achievement found in this study underscores the importance of fostering both intrinsic and extrinsic motivational factors within educational settings. Intrinsic motivation, such as curiosity and interest in learning, enhances deep learning and conceptual understanding, while extrinsic motivation, such as recognition or academic rewards, encourages goal-directed behaviors. Schools and teachers must therefore implement instructional strategies that nurture both types of motivation, including interactive learning activities, meaningful feedback, goal-setting practices, and supportive teacher-student relationships.

Third, the learning environment was found to significantly influence academic achievement. A positive learning environment—characterized by comfortable physical facilities, supportive peer relationships, constructive teacher-student interactions, and a safe psychological climate—creates optimal conditions for learning. This finding is in line with previous research indicating that conducive classroom climates enhance students' engagement and academic outcomes (Niazi, 2024; Regidor et al., 2024). When students feel safe, respected, and supported, they are more likely to participate actively in discussions, collaborate effectively with peers, and concentrate on academic tasks. Conversely, environments marked by disruption, poor facilities, or negative interpersonal dynamics can hinder focus and reduce learning effectiveness.

Interestingly, the results also demonstrate that the learning environment significantly influences learning motivation. This suggests that environmental factors contribute not only directly to achievement but also indirectly by shaping motivational levels. Supportive environments provide students with emotional security and academic resources that strengthen their willingness to engage in learning activities. For instance, classrooms equipped with adequate instructional materials and collaborative learning opportunities encourage curiosity and active participation. Therefore, the environment acts as both a contextual facilitator and a motivational enhancer.

The mediation analysis further reveals that learning motivation significantly mediates the relationships between teaching competence and academic achievement, as well as between learning environment and academic achievement. This integrated finding suggests that motivation serves as a central mechanism connecting instructional quality and environmental conditions to academic outcomes. In practical terms, even highly competent teaching and well-designed learning environments may not produce optimal results if students lack sufficient motivation. Conversely, motivated students are better able to capitalize on effective teaching and supportive environments.

The theoretical implications of this study reinforce the multidimensional framework of academic achievement. Achievement is not solely determined by cognitive ability or curriculum design but is shaped by an interplay of instructional, psychological, and environmental factors. The findings support constructivist perspectives, which emphasize

active engagement and social interaction in the learning process, as well as motivational theories that highlight the importance of internal drives in sustaining academic effort.

From a practical standpoint, the results suggest several important implications for educators and policymakers. First, professional development programs should prioritize strengthening teachers' pedagogical competence, classroom management skills, and ability to foster motivational climates. Second, schools should implement structured motivational interventions, such as goal-setting workshops, mentoring programs, and recognition systems that reinforce academic effort. Third, educational institutions should invest in improving the physical and psychosocial learning environment by ensuring adequate facilities, promoting positive peer interactions, and maintaining supportive school cultures.

Although this study provides strong evidence of significant relationships among variables, it is important to acknowledge certain limitations. The cross-sectional design limits the ability to infer long-term causal relationships. Future research could adopt longitudinal approaches to examine how changes in teaching competence, motivation, and learning environment influence academic achievement over time. Additionally, qualitative studies could provide deeper insights into students' perceptions of motivational and environmental factors.

Overall, the findings of this study highlight that improving students' academic achievement requires a comprehensive strategy that integrates high teaching competence, strong student motivation, and a supportive learning environment. Among these factors, motivation plays a central and mediating role, serving as the driving force that transforms instructional quality and environmental support into measurable academic success.

5. Conclusion

This study concludes that teaching competence, learning motivation, and learning environment significantly influence students' academic achievement, both individually and collectively. Among the three predictors, learning motivation emerged as the most dominant factor affecting academic performance, indicating that students who demonstrate higher levels of persistence, engagement, and goal orientation tend to achieve better academic outcomes. Teaching competence was found to have both a direct effect on academic achievement and an indirect effect through the enhancement of learning motivation, highlighting the essential role of pedagogically skilled teachers in fostering effective learning processes. Similarly, a supportive learning environment positively contributed to students' achievement by creating conditions that encourage focus, participation, and academic engagement. The findings also confirm that learning motivation mediates the relationships between teaching competence, learning environment, and academic achievement, emphasizing its central role in the educational process. Overall, this study underscores the importance of integrating high-quality teaching practices, motivational support strategies, and conducive learning environments to optimize students' academic success and improve overall educational quality.

6. References

Azharotunnafi, A., Khoirun Nisak, H. D., & Trisnawati, D. (2025). The influence of learning motivation and learning environment on student achievement in social studies. JIPSINDO, 12(1), 1–14. https://doi.org/10.21831/jipsindo.v12i1.77536

Hanaysha, J. R. (2023). Impact of classroom environment, teacher competency, and ICT resources on students' academic performance and engagement. Journal of Research in Innovative Teaching & Learning, 16(3), 245–261. https://doi.org/10.1108/JRIT-02-2023-0035

Lailaa, N. (2025). The impact of learning motivation on students' academic achievement: A meta-analysis study. International Journal of Educational Research Review, 10(1), 45–59.

Niazi, S. (2024). Impact of learning environment on academic performance among secondary school students. Pakistan Social Sciences Review, 8(2), 112–124.

Rahmat, A., & Muslim, P. R. (2026). The influence of teachers' pedagogical competence on student learning motivation: A systematic literature review. Tarbiyah Suska Conference Series, 4(1), 297–308.

Rajagukguk, M. Y., & Lubis, P. K. D. (2023). The effect of learning motivation and learning environment on student achievement. Journal of Teaching and Learning, 2(2), 85–96.

Regidor, A. R., Vesmanos, A. T., & Deguito, P. O. (2024). The impact of a supportive learning environment on student learning motivation. Asian Journal of Education and Social Studies, 50(7), 558–571. https://doi.org/10.9734/AJESS/2024/v50i71345

Syamsurijal, N. B., Kadeni, K., & Asrori, M. A. R. (2025). The influence of students' self-efficacy and teacher competence on academic achievement through learning motivation. Journal of Pedagogy, 5(1), 15–27.

Werang, B. R., Agung, A. A. G., Leba, S. M. R., & Asaloei, S. I. (2025). School environment, student learning motivation, and academic achievement: Empirical evidence from Indonesian junior high schools. IRASS Journal of Arts, Humanities and Social Sciences, 2(5), 85–91.