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**THE EFFECT OF SCHOOL ENVIRONMENT AND TEACHER PROFESSIONAL  
 COMPETENCE ON STUDENT ACHIEVEMENT THROUGH  
 MOTIVATION AS AN INTERVENING VARIABLE  
 (CASE STUDY: SMA GKPI PADANG BULAN MEDAN)**

**ВПЛИВ ШКІЛЬНОГО СЕРЕДОВИЩА ТА ПРОФЕСІЙНОЇ КОМПЕТЕНТНОСТІ  
 ВЧИТЕЛІВ НА УСПІШНІСТЬ УЧНІВ ЧЕРЕЗ МОТИВАЦІЮ ЯК ПРОМІЖНУ  
 ЗМІННУ (ПРИКЛАД: SMA GKPI PADANG BULAN MEDAN)**

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*Джандрі Сіаніпар, Софіяр, Юсуф Ронні Едвард, Фенні Крісна Марпаунг. Вплив шкільного середовища та професійної компетентності вчителів на успішність учнів через мотивацію як проміжну змінну (Приклад: SMA GKPI Padang Bulan Medan). Науково-методична стаття.*

Це дослідження має на меті проаналізувати вплив шкільного середовища та компетентності вчителів на успішність учнів через мотивацію до навчання як проміжну змінну для учнів приватної середньої школи GKPI Padang Bulan Medan. Дослідження проводилося серед учнів приватної середньої школи GKPI Padang Bulan Medan. Популяція в цьому дослідженні становила 269 осіб. Методом вибірки, що використовувався в цьому дослідженні, була проста випадкова вибірка за формулою Словіна, що дозволило отримати вибірку у складі 161 учня. Методом збору даних були первинні дані у формі анкети та вторинні дані, отримані шляхом вивчення документації. Методом аналізу даних було використання кількісних даних, оброблених за допомогою програми Smart PLS 4, а саме: перевірка валідності, перевірка надійності, перевірка гіпотез та аналіз шляхів. Результати, отримані в цьому дослідженні, показують, що існує вплив шкільного середовища на успішність учнів через мотивацію. Це пояснюється тим, що розраховане значення  $t > t$  таблиці (1,988 > 1,96) або  $P$  значення 0,030, тому  $H_0$  відхиляється, а  $H_a$  приймається. На основі обробки даних про успішність учнів встановлено, що існує вплив компетентності вчителя на успішність учнів через мотивацію. Це пояснюється тим, що розраховане значення  $t > t$  таблиці (2,200 > 1,96) або  $P$  значення 0,048, тому  $H_0$  відхиляється, а  $H_a$  приймається.

*Ключові слова:* шкільне середовище, компетентність вчителя, успішність учнів та мотивація учнів до навчання

*Jandri Sianipar, Sofiyar, Yusuf Ronny Edward, Fenny Krisna Marpaung. The Effect of School Environment and Teacher Professional Competence on Student Achievement Through Motivation as an Intervening Variable (Case Study: Sma Gkpi Padang Bulan Medan). Scientific and methodical article.*

This research aims to analyze the influence of the school environment and teacher competence on student learning achievement through learning motivation as an intervening variable for students at GKPI Padang Bulan Medan Private High School. The research was conducted on students at GKPI Padang Bulan Medan Private High School. The population in this study was 269 people. The sampling technique used in this research was simple random sampling using the Slovin formula to obtain a sample of 161 students. The data collection technique used was primary data in the form of a questionnaire and secondary data through documentation studies. The data analysis technique uses quantitative data processed with the Smart PLS 4 program, namely validity testing, reliability testing, hypothesis testing and path analysis. The results obtained in this research are that there is an influence between the school environment on student learning achievement through motivation. This is because the calculated  $t$  value  $> t$  table (1.988 > 1.96) or  $P$  Values 0.030, so  $H_0$  is rejected and  $H_a$  is accepted. Based on data processing on student learning achievement, it is known that there is an influence between teacher competence on student learning achievement through motivation. This is because the calculated  $t$  value  $> t$  table (2.200 > 1.96) or  $P$  Values 0.048, so  $H_0$  is rejected and  $H_a$  is accepted.

*Keywords:* school environment, teacher competence, student achievement and student learning motivation

**L**earning achievement is the result that students or someone wants to achieve after carrying out teaching and learning activities. Learning achievement in learning is very important because the success of learning carried out in teaching and learning activities can be seen from the learning achievements of students. Students try to get the best learning results to achieve good achievement as well. Student learning achievement is not only seen from academic grades at school but also seen from changes in the student, because in teaching and learning activities students experience the teaching and learning process as a process of change that occurs in students due to experiences gained by students when interacting with their environment.

The environment is one of the factors that influence children's learning achievement. There are two factors that influence student learning, namely internal factors and external factors. Internal factors consist of physical factors, psychology, interest, motivation and learning methods. External factors are family, school and community factors. desired. The school environment is the unity of space in formal educational institutions that influence the formation of attitudes and the development of student potential. The school environment can be classified as the second education center after the family, so that it has the function of continuing family education with teachers as a

substitute for parents who must be obeyed. The school environment includes teacher-student relationships, student-student relationships, and educational facilities and infrastructure at school. In order to carry out smooth learning conditions, it is also necessary to support school conditions that are safe, comfortable and quiet.

Another factor is the teacher's professional competence. One of the most important components of education and can be a major problem for the failure or success of education, especially in the learning process is the role of an educator or teacher. This role is important because teachers have a role in educational development, especially those organized in schools.

Based on the data, that learning facilities in the school environment that support the learning process are quite complete, the school already has supporting infrastructure such as libraries, projectors, tables and chairs, and also internet networks. However, the available facilities have not been able to be used optimally. There are several projectors that cannot be used so that teachers at school do not utilize these facilities, books in the library are also inadequate, there are still many old books with incomplete material. By paying attention to and managing these factors, schools can create a supportive environment for students' academic development and well-being, helping them to achieve optimal learning outcomes.

#### Analysis of recent research and publications

According to Anwar Faisal (2022) Learning is a process of deliberate change in one's behavior based on experience, not only attitudes and values but mastery of knowledge and skills. Learning is an activity that involves all elements, a change that is relatively permanent so that it will have an impact on the spiritual and social aspects of students.

According to Fadillah, learning is a process of behavior change that is permanent through a series of experiences. Learning is not just related to books which are one of the means of learning, but related to the child's interaction with the environment, namely planned experiences that bring about changes in behavior.

According to Andanti (2009), the school environment is a spatial unit of a formal educational institution, which influences the formation of attitudes and the development of student potential.

According to Ayanti (2014) The school environment is a situation where students are in a formal educational institution that organizes teaching, counseling and training programs that help students develop their learning potential. The school environment is also a place that can influence the formation of one's personality attitudes.

According to the large Indonesian dictionary, it means capable (knowing); having the power (to decide, determine) something; authorized. Competence is an ability/skill that a person has and can demonstrate consistently, which shows a good level of performance in specific job functions.

According to Farhan (2022) Competence comes from English "competency" which means proficiency, ability, and authority. Someone is said to be competent in a particular field if they master the skills to work in a particular field. Muslich explained that competence is knowledge, attitudes and skills that are actualized in habits of thought and action. competence is a performance that leads to the complete achievement of goals towards the desired conditions. Teacher competence is closely related to a person's ability to something professional in the field of education.

According to Sardiman (2018) Motivation comes from the Latin word, namely "movere" which means encouragement or driving force. Motivation as a condition that moves humans towards a certain goal. Motive can be said to be a driving force from within and within the subject to carry out certain activities in order to achieve a goal.

#### The main part

##### Materials and Methods.

The approach in this study is to use an associative approach, an associative approach is an approach where to find out that there is a relationship or influence between the two variables (independent variable and dependent variable). In this study, the independent variable X1 is the school environment, X2 is teacher competence, Z is learning motivation and the dependent variable Y is student achievement.

The research was conducted from July 2024 to September 2024 at GKPI Padang Bulan Medan Private High School which is located at Jalan Jamin Ginting No.21, Padang Bulan, Kec. Medan Baru, Medan City, North Sumatra.

The population in this study were all students at GKPI Padang Bulan Medan Private High School, which were recorded in July 2024, totaling 269 people.

This study has a population of 269 people, so in determining the sample in this study using the Solvin formula using an error rate of 5% with the calculation:

$$n = \frac{N}{1 + NE_2}, \quad (1)$$

where n = Sample Size;  
N = Population size;  
E = Standardization Error.

##### Results and Discussion.

##### Characteristics of Respondents.

The characteristics used as research subjects were obtained from personal data or identity collected on questionnaire questions in the form of gender, age, class and major with a total of 161 respondents at GKPI Padang Bulan Medan Private High School.

Based on Figure 1 above, the author explains that the number of respondents based on gender is 85 male students with a percentage obtained of 53% and 76 female students with a percentage of 47%. From this graph, it can be concluded that the number of male students is slightly more than female students, with a difference of 6%.

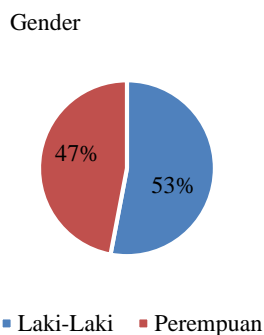


Figure 1. Characteristics of Respondents Based on Gender  
 Source: authors' own elaboration

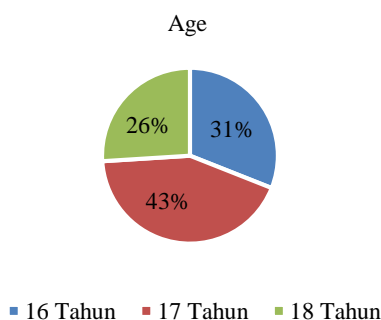


Figure 2. Age Comparison Chart of Respondents  
 Source: authors' own elaboration

**Characteristics of Respondents Based on Age.**  
 Based on Figure 2. above, the author explains that the number of respondents based on age is 50 students aged 16 years with a percentage obtained of 31%, 17 years of age totaling 70 students with a percentage of 43% and 18 years of age as many as 41 students with a

percentage of 26%. From this graph, it can be seen that the majority of students are at the age of 17, followed by 16-year-old students, and the 18-year-old age group has the least number of students.

**Characteristics of Respondents by Class.**

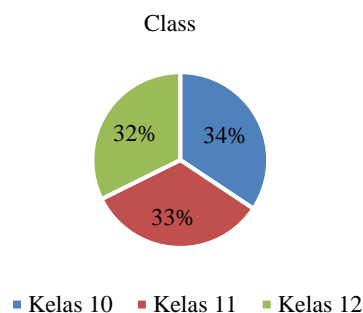


Figure 3. Age Comparison Chart of Respondents  
 Source: authors' own elaboration

Based on Figure 3. above, the author explains that the number of respondents based on class is 55 students in class 10 with a percentage obtained of 34%, class 11 totaling 54 students with a percentage of 33% and class 12 as many as 52 students with a percentage of 32%. From this graph, it can be seen that the number of students in each class is relatively balanced. Grade 10 has the highest number of students, followed by grade 11, and grade 12 has the least number of students, although the difference is not too large.

**Characteristics of Respondents by Major.**

Based on Figure 4. above, the author explains that the number of respondents based on majors of 85 students is in the science department with a percentage obtained of 53% and social studies majors as many as 76 students with a percentage of 47%. From the graph above, it can be seen that the largest number of students who are respondents are in the science department even though the difference is not too large.

**Hypothesis Testing.**

1. The influence of school environment on student learning achievement.

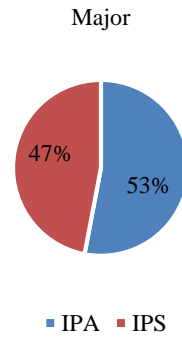


Figure 4. Comparison Chart of Respondents' Majors  
Source: authors' own elaboration

Table 1. T-test of school environment on student learning achievement

Latent variable	Path Coefficient	P-value	Conclusion
X1 => Y	0,977	0.000	Significant

Source: authors' own elaboration

Based on the table above, the path coefficients result for the first hypothesis is 0.977 (positive), this positive value indicates that the school environment has a positive effect on student learning achievement of 0.372. The P value of  $0.000 \leq 0.05$ , which means that the school environment has a significant effect on student learning achievement or in other words, this result supports the first hypothesis, namely that the

school environment has a positive and significant effect on student learning achievement. The first hypothesis shows that improving or improving the quality of the school environment can have a positive impact on improving student achievement.

2. The influence of teacher professional competence on student learning achievement.

Table 2. T-test of teachers' professional competence on students' learning achievement

Latent variable	Path Coefficient	P-value	Conclusion
X2 -> Y	-0.029	0,070	Significant

Source: authors' own elaboration

Based on the table above, the results of the path coefficients for the second hypothesis are -0.029 (negative), the negative value indicates that the professional competence of teachers has a negative effect on student learning achievement of -0.029. The P value of  $0.070 > 0.05$ , which means that teacher professional competence has no significant effect on student learning achievement or in other words, this result rejects the second hypothesis, namely teacher

professional competence has no significant effect on student learning achievement. The second hypothesis suggests that an increase in teachers' professional competence is associated with a very small decrease in student learning achievement, although the effect is hardly significant.

3. The influence of school environment on student learning motivation.

Table 3. T-test of school environment on students' learning motivation

Latent variable	Path Coefficient	P-value	Conclusion
X1 -> Z	0.190	0,012	Significant

Source: authors' own elaboration

Based on the table above, the path coefficients result for the third hypothesis is 0.190 (positive), this positive value indicates that the school environment has a positive effect on student learning motivation by 0.190. The P value of  $0.010 \leq 0.05$  means that the school environment has a significant effect on student learning motivation or in other words, this result supports the third hypothesis, namely that the school

environment has a positive and significant effect on student learning motivation. The third hypothesis shows that the school environment has a significant positive effect on student learning motivation. In other words, a good school environment contributes to increasing students' learning motivation.

4. The effect of teacher competence on student learning motivation.

Table 4. T-test of teacher competence on student learning motivation

Latent variable	Path Coefficient	P-value	Conclusion
X1 -> Z	0.190	0,012	Significant

Source: authors' own elaboration

Based on the table above, the result of path coefficients for the fourth hypothesis is 0.372 (positive), this positive value indicates that teacher professional competence has a positive effect on student learning motivation by 0.372. The P value of  $0.000 \leq 0.05$  which means that teacher professional competence has a significant effect on student learning motivation or in other words, this result supports the

fourth hypothesis, namely teacher professional competence has a positive and significant effect on student learning motivation. The fourth hypothesis suggests that improvements in teachers' professional competence contribute to increased student learning motivation.

5. The effect of student learning motivation on student learning achievement.

Table 5. Student learning motivation t test on student learning achievement

Latent variable	Path Coefficient	P-value	Conclusion
Z -> Y	0.0444	0,771	Significant

Source: authors' own elaboration

Based on the table above, the results of the path coefficients for the fifth hypothesis are 0.0444 (positive), this positive value indicates that student learning motivation has a positive effect on student learning achievement by 0.0444. The P value is  $0.771 > 0.05$ , which means that student learning motivation has no significant effect on student learning achievement or in other words, this result rejects the fifth hypothesis, namely student learning motivation has no significant

effect on student learning achievement. The fifth hypothesis indicates that although there is a very small positive effect of learning motivation on learning achievement, this effect is not strong or significant enough to substantially affect student learning achievement.

6. The effect of school environment on student learning achievement through learning motivation as an intervening variable.

Table 6. t test of school environment on student learning achievement through learning motivation as an intervening variable

Latent variable	Path Coefficient	P-value	Conclusion
X1.Z -> Y	0.913	0,030	Significant

Source: authors' own elaboration

Based on the table above, the test result for the sixth hypothesis is 0.913 (positive) and P Value of 0.030  $< 0.05$ , which means that student learning motivation has a positive effect or strengthens the influence of the school environment on student achievement significantly or in other words, student learning motivation plays a role in strengthening the relationship between school environment variables and

student achievement. Where these results indicate that the sixth hypothesis shows that student learning motivation strengthens the influence of the school environment on student achievement.

7. The effect of teacher professional competence on student learning achievement through learning motivation as an intervening variable.

Table 7. The t test of teacher professional competence on student learning achievement through learning motivation as an intervening variable

Latent variable	Path Coefficient	P-value	Conclusion
X2.Z -> Y	0.260	0,048	Significant

Source: authors' own elaboration

Based on the table above, the test result for the seventh hypothesis is 0.260 (positive) and P Value of 0.048  $< 0.05$ , which means that student learning motivation has a positive effect or strengthens the effect of teacher professional competence on student achievement significantly or in other words, student learning motivation plays a role in strengthening the

relationship between teacher professional competence variables and student achievement. Where these results indicate that the seventh hypothesis shows that student learning motivation strengthens the influence of teacher professional competence on student learning achievement.

The Effect of School Environment on Student Achievement.

This is in accordance with previous research conducted by Safutra (2023), Salim (2022) and Hasya (2022) which states that the school environment affects student learning achievement. The quality of physical facilities such as classrooms, libraries, laboratories, and recreational areas can affect the comfort and effectiveness of the learning process. Good and adequate facilities support better learning activities. A school environment that supports students' psychological well-being, including counseling services, extracurricular activities, and social support, can increase motivation and reduce stress, thus having a positive impact on learning achievement.

Effect of Teacher Competence on Student Achievement.

This is in accordance with research previously conducted by Hikmah (2019), Nursyam (2019) and Marup (2023) which states that teacher competence has no effect on student learning achievement. The competencies measured may not be directly related to the teaching areas that most affect student achievement, such as specific teaching strategies that are more relevant to the subject or student needs. While teachers in general may have competencies, variations in the quality of competencies among teachers may result in inconsistent influences on student achievement. Some teachers may have better teaching skills than others.

Effect of School Environment on Student Motivation.

This is in accordance with previous research conducted by Sumardi (2022), Sitepu (2022) and Lestari (2022) which states that the school environment affects student learning motivation. A school environment that supports positive interactions between students and classmates creates a pleasant social atmosphere and encourages learning motivation. Friendship and cooperation in learning groups can increase student engagement. Reward and recognition programs, such as certificates, awards, or public recognition, can increase student motivation by providing incentives for academic achievement.

Effect of Teacher Competence on Student Motivation.

This is in accordance with previous research conducted by Marup (2023), Munfarida (2022) and Wahyuningrum (2020) which state that teacher competence affects student learning motivation. Competent teachers have a deep understanding of the subject matter they teach. Mastery of the material allows teachers to explain concepts clearly, making lessons more interesting and easier for students to understand, which in turn increases learning motivation. Competent teachers can build positive and supportive relationships with students. Good relationships between teachers and students boost students' confidence and make them feel more comfortable to participate in class.

Effect of Learning Motivation on Student Achievement.

This is in accordance with previous research conducted by Sidabutar (2020), Annisa (2021) and Rinjani (2022) which states that student learning motivation has no effect on student achievement. Students may feel motivated but do not translate that motivation into concrete actions such as studying effectively, completing assignments, or preparing well for exams. High motivation in the absence of effective learning strategies or good study skills can hinder achievement. Even if students are highly motivated, an unfavorable learning environment (e.g. noisy class, poor facilities) can reduce the effectiveness of their motivation. Issues outside of school, such as family conditions, health problems, or social and economic instability, may affect students' ability to utilize their motivation effectively.

The Effect of School Environment on Student Achievement Through Learning Motivation.

This is in accordance with previous research conducted by Juwita (2020), Safutra (2023) and Aminah (2020) which states that the school environment affects student achievement through learning motivation. A school environment that provides adequate educational facilities, such as laboratories, libraries, and technology, can increase students' interest and motivation to learn. Good access to these resources allows students to be more active in learning and exploring subject matter, which in turn can improve their achievement. A school environment with a positive, inclusive and supportive culture creates an atmosphere that motivates students to learn. A school culture that emphasizes academic achievement, rewards effort and celebrates achievement can encourage students to engage more actively in the learning process. A conducive academic climate where students feel valued and encouraged to develop can increase their motivation to learn. An environment that demonstrates the importance of education and provides emotional support can motivate students to try harder.

Effect of Teacher Competence on Student Achievement through Learning Motivation.

This is in accordance with previous research conducted by Marup (2023), Ali (2022) and Munfarida (2022) which states that teacher professional competence affects student learning achievement through learning motivation. Competent teachers have a deep understanding of the subject matter, allowing them to explain concepts clearly and thoroughly. Good explanations help students understand the material better, increasing their interest and motivation to learn further. Professional teachers often use a variety of innovative and engaging teaching methods, such as project-based learning, interactive discussions and educational technology. These methods can make lessons more interesting, increase students' motivation and encourage them to excel.

## Conclusions

Improve the quality of the school environment by improving school facilities, including comfortable classrooms, well-equipped laboratories and modern libraries. Adequate facilities can increase students' comfort and interest in learning. Improve teachers'

competencies by organizing regular training and workshops for teachers on the latest teaching methods, educational technology and student motivation strategies. Continuous professional development can improve teachers' skills and knowledge. Support student learning motivation by providing counseling services and emotional support to help students

overcome personal stress and challenges. This support can improve students' well-being and their motivation to learn. Regular implementation and evaluation of implemented initiatives to assess their effectiveness in improving student learning achievement. Use feedback from students, teachers and parents to make necessary adjustments.

### Abstract

This research aims to comprehensively analyze the influence of the school environment and teacher competence on student learning achievement through learning motivation as an intervening variable for students at GKPI Padang Bulan Medan Private High School. The significance of this study lies in understanding the complex interrelationships between educational environmental factors and academic performance outcomes.

**Methodology.** The research was conducted on students at GKPI Padang Bulan Medan Private High School, representing a diverse student population within the private educational sector. The total population in this study comprised 269 students enrolled at the institution during the research period. The sampling technique employed in this research was simple random sampling, utilizing the Slovin formula to determine an appropriate sample size, which resulted in a final sample of 161 students participating in the study.

The data collection technique incorporated both primary and secondary data sources. Primary data was gathered through structured questionnaires designed to measure school environment perception, teacher competence assessment, learning motivation levels, and student learning achievement indicators. Secondary data was obtained through comprehensive documentation studies, including academic records and institutional documents.

**Data Analysis.** The data analysis technique utilizes quantitative methods processed with the Smart PLS 4 statistical program. The analytical procedures included validity testing to ensure measurement accuracy, reliability testing to confirm instrument consistency, hypothesis testing to examine proposed relationships, and path analysis to determine direct and indirect effects among variables.

**Research Findings.** The results obtained in this research demonstrate significant relationships between the examined variables. Firstly, there is a statistically significant influence between the school environment on student learning achievement through learning motivation as a mediating variable. This conclusion is supported by the calculated t-value exceeding the critical t-table value ( $1.988 > 1.96$ ) with P-Values of 0.030, which falls below the significance threshold of 0.05. Consequently, the null hypothesis ( $H_0$ ) is rejected and the alternative hypothesis ( $H_a$ ) is accepted, confirming the mediating role of motivation.

Furthermore, based on comprehensive data processing regarding student learning achievement, it is evident that there exists a significant influence between teacher competence on student learning achievement through learning motivation. This finding is substantiated by the calculated t-value surpassing the t-table threshold ( $2.200 > 1.96$ ) with P-Values of 0.048, again below the 0.05 significance level. Therefore,  $H_0$  is rejected and  $H_a$  is accepted, validating the hypothesized relationship.

**Conclusion.** These findings underscore the critical importance of both school environment quality and teacher competence in fostering student academic success, with learning motivation serving as a crucial intervening mechanism that channels these influences toward improved learning outcomes.

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