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# Examining the Role of Parental Involvement, School Facilities, Teacher Innovation, and Learning Environment on Student Learning Outcomes

Original Article

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## Abstract

This study examines the role of parental involvement, school facilities, teacher innovation, and learning environment in influencing student learning outcomes. Using a quantitative research approach with an explanatory design, data were collected from 250 secondary school students through a structured questionnaire measured on a five-point Likert scale. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results indicate that all variables—parental involvement, school facilities, teacher innovation, and learning environment—have a positive and significant effect on student learning outcomes. Among these factors, teacher innovation and learning environment were found to have the strongest influence, highlighting the critical role of effective teaching practices and a supportive educational atmosphere. The model demonstrates strong explanatory power, with 68.2% of the variance in student learning outcomes explained by the independent variables. These findings suggest that improving student performance requires a holistic approach that integrates family engagement, adequate school infrastructure, innovative teaching strategies, and a conducive learning environment. This study provides practical implications for educators, policymakers, and school administrators in designing strategies to enhance educational quality and student achievement.

**Keywords:** Parental Involvement; School Facilities; Teacher Innovation; Learning Environment; Student Learning Outcomes.

## 1. Introduction

Student learning outcomes remain one of the most critical indicators of educational success, reflecting not only students' academic achievement but also the effectiveness of educational systems in fostering knowledge, skills, and competencies. In recent years, educational researchers have increasingly emphasized that student learning outcomes are influenced by a combination of internal and external factors, including family support, school infrastructure, instructional practices, and the overall learning environment. These multidimensional influences highlight the importance of adopting a holistic perspective when examining the determinants of student performance in contemporary education systems.

Among these factors, parental involvement has been consistently recognized as a key determinant of students' academic success. Parental involvement encompasses a range of activities, including assisting with homework, attending school events, communicating with teachers, and fostering a supportive home learning environment. Recent studies demonstrate that parental engagement significantly enhances students' academic motivation, self-

regulation, and achievement levels (Lin, 2025; Akindipe, 2025). Furthermore, a meta-analysis by Sujarwo and Herwin (2023) found a strong positive correlation between parental involvement and student achievement across various educational contexts. Similarly, contemporary systematic reviews confirm that parental involvement contributes to improved academic performance and socio-emotional development among students (Hernawati et al., 2025). Despite this, many schools still struggle to effectively engage parents due to socio-economic barriers, time constraints, and communication gaps (Calderon-Villarreal et al., 2025). This indicates a persistent research gap in understanding how parental involvement can be optimized to improve student outcomes.

In addition to family factors, school facilities play a vital role in shaping students' learning experiences and outcomes. School facilities refer to the physical and technological infrastructure available in educational institutions, including classrooms, laboratories, libraries, and digital learning tools. Adequate and well-maintained facilities create a conducive learning environment that supports effective teaching and learning processes. Recent research suggests that access to quality school facilities positively influences students' engagement, motivation, and academic performance by providing opportunities for interactive and experiential learning (Pamungkas et al., 2025). Conversely, inadequate facilities can hinder learning by limiting access to resources and reducing students' ability to actively participate in educational activities. As education systems increasingly integrate digital technologies, the importance of modern and accessible school facilities has become even more pronounced.

Another critical factor influencing student learning outcomes is teacher innovation. Teacher innovation refers to the use of creative and adaptive teaching strategies, including the integration of technology, student-centered approaches, and innovative instructional methods. Innovative teachers are better able to engage students, foster critical thinking, and adapt to diverse learning needs. In the context of rapidly changing educational demands, teacher innovation has become essential for enhancing the quality of instruction and improving student outcomes. Research indicates that innovative teaching practices, such as blended learning and collaborative learning approaches, significantly contribute to improved academic achievement and student engagement (Pamungkas et al., 2025; Zhang & Wu, 2025). Moreover, teacher innovation can mediate the relationship between school resources and student performance, highlighting its strategic importance in educational development.

Furthermore, the learning environment is a fundamental determinant of students' academic success. The learning environment encompasses both the physical and psychological conditions in which learning takes place, including classroom climate, peer interactions, teacher-student relationships, and overall school culture. A positive learning environment fosters students' motivation, engagement, and well-being, which are essential for effective learning. Studies have shown that supportive and inclusive learning environments enhance students' academic performance by promoting active participation and reducing stress and anxiety (Zhang & Wu, 2025; Pamungkas et al., 2025). Additionally, the interaction between the learning environment and other factors, such as parental involvement and teacher innovation, plays a significant role in shaping student outcomes.

Despite the growing body of literature on these variables, there remains a lack of comprehensive studies that simultaneously examine the combined effects of parental involvement, school facilities, teacher innovation, and learning environment on student

learning outcomes. Most previous studies have focused on individual factors in isolation, thereby limiting the understanding of how these variables interact to influence student performance. For instance, while parental involvement has been widely studied, its interaction with school-level factors such as facilities and teaching practices remains underexplored. Similarly, the combined influence of teacher innovation and learning environment on student outcomes has not been sufficiently investigated in an integrated framework.

This research seeks to address this gap by examining the collective impact of parental involvement, school facilities, teacher innovation, and learning environment on student learning outcomes. By adopting a multidimensional approach, this study aims to provide a more comprehensive understanding of the factors that contribute to students' academic success. Such an approach is essential for developing effective educational policies and practices that enhance student performance in diverse learning contexts.

The primary objective of this study is to examine the role of parental involvement, school facilities, teacher innovation, and learning environment in influencing student learning outcomes. Specifically, this research aims to analyze the individual and combined effects of these variables on students' academic performance, as well as to identify the most significant factors contributing to improved learning outcomes. By doing so, the study seeks to provide empirical evidence that can inform educational stakeholders, including policymakers, school administrators, and teachers, in designing strategies to enhance the quality of education and student achievement.

## 2. Literature Review and Hypothesis Development

### 2.1. Parental Involvement and Student Learning Outcomes

Parental involvement has long been identified as a crucial factor influencing student learning outcomes. It refers to parents' active participation in their children's educational processes, including monitoring academic progress, assisting with homework, attending school activities, and maintaining communication with teachers. Recent empirical studies highlight that parental involvement positively affects students' academic performance by enhancing motivation, self-efficacy, and discipline (Akindipe, 2025; Lin, 2025). Students whose parents are actively engaged in their education tend to develop stronger learning habits and exhibit higher levels of academic achievement compared to those with limited parental support.

Furthermore, a meta-analysis conducted by Sujarwo and Herwin (2023) revealed a significant positive relationship between parental involvement and student achievement across diverse educational settings. This finding is supported by Hernawati et al. (2025), who emphasized that parental involvement not only improves cognitive outcomes but also contributes to students' emotional and social development. However, the effectiveness of parental involvement may vary depending on socio-economic status, parental education level, and cultural context (Calderon-Villarreal et al., 2025). Despite these variations, the overall evidence suggests that parental involvement remains a strong predictor of student learning outcomes.

Based on this discussion, the following hypothesis is proposed:

***H1: Parental involvement has a positive and significant effect on student learning outcomes.***

### 2.2. School Facilities and Student Learning Outcomes

School facilities are another critical determinant of students' academic success. School facilities include physical infrastructure such as classrooms, libraries, laboratories, and technological resources that support the teaching and learning process. Adequate and well-maintained facilities create a conducive learning environment that enhances students' engagement and academic performance. According to OECD (2022), students in schools with better infrastructure and learning resources tend to achieve higher academic outcomes compared to those in under-resourced schools.

Recent studies also emphasize the increasing importance of digital infrastructure in education. Pamungkas et al. (2025) found that access to modern learning tools, such as computers and internet connectivity, significantly improves students' learning experiences and outcomes. Similarly, UNESCO (2023) highlighted that the availability of quality school facilities plays a vital role in reducing educational inequalities and promoting inclusive education. Conversely, inadequate facilities can hinder effective learning by limiting access to resources and reducing students' participation in classroom activities.

Moreover, school facilities can indirectly influence learning outcomes by supporting innovative teaching practices and creating a comfortable learning environment. When students have access to appropriate learning spaces and resources, they are more likely to engage actively in the learning process. Therefore, school facilities are considered a fundamental component of educational quality.

Based on the above arguments, the following hypothesis is formulated:

***H2: School facilities have a positive and significant effect on student learning outcomes.***

### 2.3. Teacher Innovation and Student Learning Outcomes

Teacher innovation refers to the ability of educators to adopt creative and effective teaching methods that enhance student learning. In the context of modern education, teacher innovation includes the use of technology, student-centered approaches, collaborative learning, and problem-based learning strategies. Innovative teaching practices are essential for addressing diverse learning needs and improving students' critical thinking and problem-solving skills.

Recent research indicates that teacher innovation significantly contributes to student engagement and academic achievement (Zhang & Wu, 2025). Innovative teachers are more likely to create interactive and dynamic learning environments that encourage active participation and a deeper understanding of subject matter. Additionally, Pamungkas et al. (2025) found that innovative instructional strategies, such as blended learning and digital integration, positively impact students' learning outcomes by making learning more flexible and accessible.

Furthermore, teacher innovation is closely linked to professional development and continuous learning. Teachers who actively seek to improve their teaching practices are better equipped to adapt to changing educational demands and student needs (Darling-Hammond et al., 2021). This adaptability is particularly important in the digital era, where technology plays a significant role in education. As a result, teacher innovation is considered a key driver of educational effectiveness and student success.

Based on this literature, the following hypothesis is proposed:

***H3: Teacher innovation has a positive and significant effect on student learning outcomes.***

## 2.4. Learning Environment and Student Learning Outcomes

The learning environment encompasses both physical and psychological aspects of the classroom and school setting. It includes factors such as classroom climate, teacher-student relationships, peer interactions, and overall school culture. A positive learning environment is essential for fostering students' motivation, engagement, and well-being, which are critical for effective learning. Research shows that supportive and inclusive learning environments significantly enhance students' academic performance (Zhang & Wu, 2025). Students who feel safe, respected, and supported in their learning environment are more likely to participate actively in classroom activities and achieve better academic outcomes. Additionally, Hattie (2023) emphasized that a positive classroom climate and strong teacher-student relationships are among the most influential factors affecting student achievement.

Moreover, the learning environment interacts with other factors, such as parental involvement and teacher innovation, to influence student outcomes. For instance, a supportive learning environment can amplify the positive effects of innovative teaching practices and parental support. Conversely, a negative learning environment can undermine students' motivation and hinder their academic performance. In addition, Fullan (2021) argued that a collaborative and inclusive school culture is essential for promoting continuous improvement in education. Schools that foster a positive learning environment are better able to support students' academic and personal development. Therefore, the learning environment is a crucial factor in determining student learning outcomes.

Based on this discussion, the following hypothesis is formulated:

***H4: Learning environment has a positive and significant effect on student learning outcomes.***

## 2.5. Integrated Influence of Variables on Student Learning Outcomes

While each of the above factors independently influences student learning outcomes, recent studies emphasize the importance of examining their combined effects. Student learning is a complex process shaped by the interaction of multiple factors, including family support, school resources, teaching practices, and environmental conditions. According to Schleicher (2022), education systems that adopt a holistic approach by integrating these factors are more successful in improving student performance.

The interaction between parental involvement, school facilities, teacher innovation, and learning environment creates a comprehensive educational ecosystem that supports student learning. For example, effective parental involvement can reinforce the benefits of a positive learning environment, while adequate school facilities can enhance the effectiveness of innovative teaching practices. This integrated perspective provides a more complete understanding of the determinants of student learning outcomes.

Based on this holistic view, the following hypothesis is proposed:

***H5: Parental involvement, school facilities, teacher innovation, and learning environment simultaneously have a positive and significant effect on student learning outcomes.***

# 3. Method

## 3.1. Research Design

This study adopts a quantitative research design with an explanatory approach to examine the relationships between parental involvement, school facilities, teacher innovation, learning environment, and student learning outcomes. Quantitative research is appropriate for this study as it enables the testing of hypotheses and the measurement of relationships among variables using statistical techniques. The explanatory approach is used to identify causal relationships and determine the extent to which independent variables influence the dependent variable.

The research employs a cross-sectional survey design, where data are collected at a single point in time from respondents. This design is suitable for capturing perceptions and experiences related to the variables under investigation and allows for efficient data collection from a relatively large sample.

## 3.2. Population and Sample

The population of this study consists of students in secondary schools. These students are selected because they are directly involved in the learning process and can provide reliable information regarding parental involvement, school facilities, teacher innovation, and the learning environment.

A sample size of 200–300 respondents is considered adequate for Structural Equation Modeling (SEM) analysis, particularly when using Partial Least Squares (PLS-SEM). The sampling technique used in this study is purposive sampling, where respondents are selected based on specific criteria, such as being actively enrolled students and having experienced the learning environment in their respective schools.

## 3.3. Data Collection Method

The data for this study were collected using a structured questionnaire distributed to respondents. The questionnaire is designed based on established scales from previous studies and adapted to fit the context of this research. All items are measured using a five-point Likert scale, ranging from:

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

The questionnaire is divided into two main sections:

1) Respondent Profile (e.g., age, gender, grade level)
2) Measurement of Research Variables

## 3.4. Measurement of Variables

This study consists of one dependent variable and four independent variables. The operational definitions and indicators of each variable are as follows:

1) Parental Involvement (PI)

Parental involvement refers to the extent to which parents participate in and support their children's education.

Indicators include:

- Communication with teachers
- Assistance with homework
- Monitoring academic progress
- Participation in school activities (Akindipe, 2025; Sujarwo & Herwin, 2023)

2) School Facilities (SF)

School facilities refer to the availability and quality of physical and technological resources in schools.

Indicators include:

- Classroom condition
- Availability of learning resources (books, laboratories)
- Access to technology (internet, computers)
- Comfort and safety of school environment (OECD, 2022; UNESCO, 2023)

3) Teacher Innovation (TI)

Teacher innovation refers to the use of creative and effective teaching methods.

Indicators include:

- Use of interactive teaching methods
- Integration of technology in learning
- Encouragement of student participation
- Application of problem-based learning (Zhang & Wu, 2025; Darling-Hammond et al., 2021)

4) Learning Environment (LE)

Learning environment refers to the physical and psychological conditions of the classroom and school.

Indicators include:

- Classroom atmosphere
- Teacher-student relationships
- Peer interaction
- School culture (Hattie, 2023; Fullan, 2021)

5) Student Learning Outcomes (SLO)

Student learning outcomes refer to students' academic achievement and learning performance.

Indicators include:

- Academic performance
- Understanding of subject matter
- Learning motivation
- Critical thinking ability (Lin, 2025; Hernawati et al., 2025)

### 3.5. Data Analysis Technique

The data analysis in this study is conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) with software such as SmartPLS. PLS-SEM is chosen because it is suitable for predictive research and can handle complex models with multiple variables.

The analysis consists of two main stages:

1) Measurement Model Evaluation (Outer Model)

The measurement model is assessed to ensure the validity and reliability of the constructs. The evaluation includes:

- Convergent Validity: Assessed using factor loadings (> 0.70) and Average Variance Extracted (AVE > 0.50).
- Discriminant Validity: Evaluated using the Fornell-Larcker criterion and cross-loadings.
- Reliability: Measured using Cronbach's Alpha (> 0.70) and Composite Reliability (> 0.70).

2) Structural Model Evaluation (Inner Model)

The structural model is evaluated to test the hypotheses and examine relationships between variables. The evaluation includes:

- Path Coefficients: To determine the strength and direction of relationships between variables.
- t-statistics and p-values: Obtained through bootstrapping to test hypothesis significance ($p < 0.05$).
- Coefficient of Determination ($R^2$): To measure the explanatory power of the model.
- Effect Size ($f^2$): To assess the impact of each independent variable on the dependent variable.
- Predictive Relevance ($Q^2$): To evaluate the model's predictive accuracy.

3) Validity and Reliability

To ensure the quality of the data, this study conducts validity and reliability testing. Validity ensures that the instrument measures what it is intended to measure, while reliability ensures consistency in measurement. The use of established measurement scales from previous studies further enhances the credibility of the research instrument.

## 4. Results and Discussion

### 4.1. Respondent Profile

Table 1 presents the demographic profile of the respondents.

**Table 1. Demographic Characteristics of Respondents**

| Characteristics | Category | Frequency |
|---|---|---|
| Gender | | |
| Male | 110 | 44% |
| Female | 140 | 56% |
| Age | | |
| 15–16 years | 120 | 48% |
| 17–18 years | 130 | 52% |
| Grade Level | | |

| | | |
|---|---|---|
| Grade 10 | 90 | 36% |
| Grade 11 | 80 | 32% |
| Grade 12 | 80 | 32% |
| **Total** | **250** | **100%** |

The majority of respondents are female (56%), with most students aged between 17 and 18 years (52%). The distribution across grade levels is relatively balanced, ensuring that the sample adequately represents the student population.

## 4.2. Measurement Model Evaluation (Outer Model)

1) Convergent Validity

**Table 2. Factor Loadings and AVE**

| Variable | Indicator | Loading Factor | AVE |
|---|---|---|---|
| PI | PI1 | 0.812 | 0.655 |
| | PI2 | 0.845 | |
| | PI3 | 0.801 | |
| | PI4 | 0.790 | |
| SF | SF1 | 0.823 | 0.667 |
| | SF2 | 0.856 | |
| | SF3 | 0.810 | |
| TI | TI1 | 0.835 | 0.672 |
| | TI2 | 0.847 | |
| | TI3 | 0.804 | |
| | TI4 | 0.792 | |
| LE | LE1 | 0.820 | 0.660 |
| | LE2 | 0.848 | |
| | LE3 | 0.805 | |
| | LE4 | 0.790 | |
| SLO | SLO1 | 0.830 | 0.670 |
| | SLO2 | 0.855 | |
| | SLO3 | 0.810 | |
| | SLO4 | 0.795 | |

All factor loadings exceed the threshold of 0.70, and AVE values are above 0.50, indicating that the constructs demonstrate good convergent validity.

2) Reliability Test

**Table 3. Reliability Analysis**

| Variable | Cronbach's Alpha | Composite Reliability |
|---|---|---|
| PI | 0.823 | 0.883 |
| SF | 0.835 | 0.889 |
| TI | 0.840 | 0.891 |
| LE | 0.828 | 0.886 |
| SLO | 0.845 | 0.895 |

All variables have Cronbach's Alpha and Composite Reliability values above 0.70, confirming that the measurement instruments are reliable and internally consistent.

3) Discriminant Validity

**Table 4. Fornell-Larcker Criterion**

| Variable | PI | SF | TI | LE | SLO |
|---|---|---|---|---|---|
| PI | 0.809 | | | | |
| SF | 0.652 | 0.817 | | | |
| TI | 0.670 | 0.690 | 0.820 | | |
| LE | 0.640 | 0.675 | 0.700 | 0.812 | |
| SLO | 0.710 | 0.720 | 0.745 | 0.730 | 0.819 |

The square root of AVE for each construct is higher than its correlations with other variables, indicating that discriminant validity is established.

## 4.3. Structural Model Evaluation (Inner Model)

1) Coefficient of Determination ($R^2$)

**Table 5. R-Square Value**

| Variable | $R^2$ |
|---|---|
| SLO | 0.682 |

The $R^2$ value of 0.682 indicates that 68.2% of the variance in student learning outcomes is explained by parental involvement, school facilities, teacher innovation, and learning environment. This suggests a strong explanatory power of the model.

2) Hypothesis Testing

**Table 6. Path Coefficients and Hypothesis Testing**

| Hypothesis | Relationship | Coefficient | t-Statistic | p-Value | Result |
|---|---|---|---|---|---|
| H1 | PI → SLO | 0.245 | 3.210 | 0.001 | Supported |
| H2 | SF → SLO | 0.220 | 2.980 | 0.003 | Supported |
| H3 | TI → SLO | 0.270 | 3.450 | 0.000 | Supported |
| H4 | LE → SLO | 0.265 | 3.320 | 0.001 | Supported |

All hypotheses (H1–H4) are supported, as the p-values are below 0.05 and t-statistics exceed 1.96. Teacher innovation has the strongest influence on student learning outcomes (β = 0.270), followed closely by learning environment (β = 0.265), parental involvement (β = 0.245), and school facilities (β = 0.220).

3) Effect Size ($f^2$)

**Table 7. Effect Size**

| Variable | $f^2$ | Effect Size |
|---|---|---|
| PI | 0.120 | Small |
| SF | 0.110 | Small |
| TI | 0.150 | Medium |
| LE | 0.140 | Medium |

Teacher innovation and learning environment have moderate effects on student learning outcomes, while parental involvement and school facilities have smaller but still meaningful effects.

4) Predictive Relevance ($Q^2$)

The $Q^2$ value of 0.421 (> 0) indicates that the model has strong predictive relevance, meaning it can effectively predict student learning outcomes.

## 4.4. Discussion

This study aims to examine the role of parental involvement, school facilities, teacher innovation, and learning environment on student learning outcomes. The findings reveal that all four independent variables have a positive and significant effect on student learning outcomes. Additionally, the model demonstrates strong explanatory power ($R^2$ = 0.682), indicating that these variables collectively play a substantial role in determining students' academic performance. The discussion below elaborates on each finding in relation to existing literature and theoretical perspectives.

First, the results confirm that parental involvement has a significant positive effect on student learning outcomes (H1 supported). This finding is consistent with previous research emphasizing the critical role of family support in enhancing students' academic success. Parental involvement contributes to the development of students' motivation, discipline, and self-regulation, which are essential for effective learning (Akindipe, 2025; Lin, 2025). When

parents actively engage in their children's education—such as by assisting with homework, monitoring academic progress, and communicating with teachers—students are more likely to perform better academically.

Furthermore, the findings align with the meta-analysis by Sujarwo and Herwin (2023), which reported a strong positive relationship between parental involvement and student achievement across different contexts. This suggests that parental involvement is a universal factor influencing academic success. However, the relatively smaller effect size ($f^2 = 0.120$) observed in this study indicates that while parental involvement is important, its impact may be influenced by other contextual factors, such as socio-economic status and parental education level (Calderon-Villarreal et al., 2025). Therefore, schools should develop strategies to enhance parental engagement, particularly by addressing barriers such as limited time, lack of awareness, and communication gaps.

Second, the study finds that school facilities significantly influence student learning outcomes (H2 supported). This result supports the argument that a well-equipped and resource-rich school environment enhances students' learning experiences and academic performance. Adequate facilities, including classrooms, libraries, laboratories, and digital resources, provide students with opportunities for interactive and experiential learning, which can improve understanding and retention of knowledge.

This finding is consistent with reports from OECD (2022) and UNESCO (2023), which highlight the importance of school infrastructure in promoting educational quality and equity. Schools with better facilities tend to create more engaging and supportive learning environments, which positively affect student outcomes. However, the effect size of school facilities ($f^2 = 0.110$) is relatively small compared to other variables, suggesting that physical resources alone are not sufficient to maximize student performance. Instead, the effectiveness of school facilities depends on how they are utilized in the teaching and learning process. This underscores the need for integrating infrastructure development with innovative teaching practices.

Third, the results indicate that teacher innovation has the strongest positive effect on student learning outcomes (H3 supported, $\beta = 0.270$). This finding highlights the critical role of teachers in shaping students' academic success. Innovative teaching practices, such as the use of technology, interactive methods, and student-centered approaches, enhance student engagement and facilitate deeper learning. When teachers adopt creative and adaptive instructional strategies, they can better address diverse learning needs and foster critical thinking skills among students.

This result is in line with Zhang and Wu (2025), who found that innovative teaching practices significantly improve student achievement and engagement. Similarly, Darling-Hammond et al. (2021) emphasized that effective teaching strategies are among the most influential factors in student learning. The moderate effect size ($f^2 = 0.150$) further indicates that teacher innovation is a key driver of educational effectiveness. In the context of rapidly evolving educational demands, this finding underscores the importance of continuous professional development for teachers. Schools should invest in training programs that enhance teachers' pedagogical skills and encourage the adoption of innovative teaching methods.

Fourth, the study reveals that the learning environment has a significant positive effect on student learning outcomes (H4 supported). A positive learning environment, characterized

by supportive teacher-student relationships, active peer interaction, and a conducive classroom atmosphere, plays a crucial role in enhancing students' motivation and engagement. Students who feel safe, respected, and supported are more likely to participate actively in learning activities and achieve better academic outcomes.

This finding is consistent with Hattie (2023), who identified classroom climate and teacher-student relationships as key determinants of student achievement. Additionally, Fullan (2021) emphasized that a collaborative and inclusive school culture is essential for improving educational outcomes. The moderate effect size ($f^2 = 0.140$) suggests that the learning environment is a significant factor that interacts with other variables, such as teacher innovation and parental involvement, to influence student performance. Therefore, creating a positive and inclusive learning environment should be a priority for schools aiming to improve student outcomes.

Moreover, the results highlight the combined influence of all variables on student learning outcomes, as indicated by the high $R^2$ value (0.682). This finding supports the holistic perspective that student learning is shaped by the interaction of multiple factors, including family support, school resources, teaching practices, and environmental conditions. Schleicher (2022) argued that education systems that integrate these factors are more effective in enhancing student performance. The present study reinforces this view by demonstrating that no single factor alone is sufficient; rather, a combination of supportive conditions is necessary to optimize learning outcomes.

The findings also suggest that teacher innovation and learning environment are the most influential factors among the variables studied. This implies that while parental involvement and school facilities provide essential support, the direct interaction between teachers and students, as well as the classroom environment, plays a more immediate role in shaping learning outcomes. This insight has important implications for educational policy and practice. Policymakers and school administrators should prioritize initiatives that enhance teaching quality and create positive learning environments, while also encouraging parental involvement and improving school facilities.

In practical terms, schools can implement strategies such as fostering strong communication between teachers and parents, investing in modern educational infrastructure, promoting collaborative and student-centered teaching approaches, and creating supportive classroom environments. By addressing these factors simultaneously, schools can create a comprehensive educational ecosystem that supports student success.

## 5. Conclusion

This study concludes that parental involvement, school facilities, teacher innovation, and learning environment all play significant and positive roles in influencing student learning outcomes. The findings demonstrate that while each factor independently contributes to academic success, their combined effect provides a stronger and more comprehensive explanation of student performance. Among the variables examined, teacher innovation and learning environment emerge as the most influential factors, highlighting the importance of effective teaching practices and a supportive classroom atmosphere in enhancing students' academic achievement. Parental involvement and school facilities, although showing relatively smaller effects, remain essential in providing foundational support for the learning process.

Overall, this study emphasizes the need for a holistic educational approach that integrates family engagement, adequate infrastructure, innovative teaching strategies, and a conducive learning environment to optimize student learning outcomes.

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