The Influence of Facilities and Infrastructure Management and Student Discipline on the Quality of the Learning Environment for Public High School Students in Indonesia

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ABSTRACT

This study examines the influence of facility and infrastructure management and student discipline on the quality of the learning environment for public high school students in Indonesia. Using a quantitative approach, data were collected from 250 students via a structured questionnaire measured on a 5-point Likert scale. Data analysis was conducted using SPSS version 25, including descriptive statistics and multiple linear regression. The results indicate that both facility and infrastructure management ($\beta = 0.435$, $p < 0.001$) and student discipline ($\beta = 0.389$, $p < 0.001$) have a significant positive effect on the quality of the learning environment. The regression model explains 56% of the variance in the dependent variable. The findings suggest that well-maintained school facilities and disciplined student behavior are essential for creating a conducive learning environment, highlighting the need for holistic strategies by school administrators and policymakers.

Keywords: Facility and Infrastructure Management, Student Discipline, Learning Environment, Public High Schools, Educational Quality.

1. INTRODUCTION

The quality of the learning environment in schools is a critical factor influencing students' academic performance, motivation, and overall development, as a conducive atmosphere not only supports effective teaching and learning but also strengthens students' social, emotional, and cognitive growth. In Indonesia, public high schools continue to face challenges in maintaining an optimal learning environment due to limitations in facilities, infrastructure, and student behavioral management, making it essential to address these issues to meet national standards and respond to students' needs. The research underscores the importance of both physical and social dimensions of the learning ecosystem, where adequate facilities and infrastructure—such as good air quality, minimal noise, and well-maintained classrooms—play a vital role in supporting learning effectiveness [1], while classroom layout, lighting, and other physical aspects significantly influence students' motivation and engagement as aligned with constructivist theories [2]. Equally important, social interactions and teacher support constitute critical components of a supportive learning environment, where positive relationships among students and teachers can enhance student motivation [3], and holistic collaboration between schools, teachers, and stakeholders is recommended to create a safe and nurturing environment for academic and personal growth [2]. Furthermore, government policy and community participation hold a strategic role in improving school quality, as efforts to strengthen teacher professionalism and curriculum relevance remain essential for achieving quality education [4], while broader solutions—such as promoting teacher and student welfare and fostering inclusivity—are needed to effectively overcome persistent challenges in Indonesian schools [5].

Facility and infrastructure management refers to the organization, maintenance, and availability of physical resources in schools, including classrooms, laboratories, libraries, and sports

facilities. Proper management ensures that these resources are functional, safe, and accessible, directly influencing the quality of the learning environment. Research consistently shows that well-maintained facilities improve students' concentration, reduce disruptions, and enhance overall satisfaction with the learning process, whereas inadequate facilities can hinder learning, reduce motivation, and negatively affect academic achievement. Within this context, School-Based Management (SBM) emphasizes autonomy in managing resources through systematic processes such as needs planning, procurement, optimal utilization, and regular maintenance [6]. Effective facility management also contributes to improved student satisfaction and learning quality [7]. Complete and well-maintained facilities support effective learning by ensuring durability, functionality, and a conducive atmosphere [8], while schools with adequate infrastructure experience smoother educational processes that contribute to the achievement of educational goals [9].

Student discipline further strengthens the quality of the learning environment by shaping students' adherence to school rules, punctuality, classroom behavior, and self-regulation. Well-maintained facilities can also foster a culture of discipline and responsibility, as students tend to follow school rules and demonstrate positive behaviors in an orderly and organized environment [6]. Discipline plays a crucial role in supporting a focused, positive, and productive learning atmosphere where teaching and learning can proceed effectively. Research shows that schools with high levels of student discipline encounter fewer behavioral disruptions, greater student engagement, and improved academic performance, reinforcing the link between facility management, student behavior, and overall educational outcomes.

Although previous studies have examined the individual effects of school facilities and student discipline on learning outcomes, limited research in the Indonesian context has simultaneously analyzed how facility and infrastructure management and student discipline collectively influence the quality of the learning environment, making this understanding vital for educational policymakers, school administrators, and teachers in formulating strategies that enhance learning conditions and student achievement. Therefore, this study aims to investigate the influence of facility and infrastructure management and student discipline on the quality of the learning environment for public high school students in Indonesia, and by employing a quantitative approach with 250 student respondents, it seeks to provide empirical evidence on the importance of both physical resources and student behavioral management in fostering a conducive educational setting.

2. LITERATURE REVIEW

2.1 Quality of the Learning Environment

The learning environment refers to the physical, social, and psychological conditions in which teaching and learning occur. A high-quality learning environment is characterized by safety, organization, availability of learning resources, and positive interpersonal interactions among students and teachers [10], [11]. In the context of public high schools in Indonesia, the quality of the learning environment significantly influences students' academic performance, motivation, and overall well-being. A conducive environment supports cognitive development, reduces distractions, and fosters engagement in learning activities [12], [13]. Factors affecting the learning environment include classroom infrastructure, availability of educational resources, school management practices, and student behavior.

2.2 *Facility and Infrastructure Management*

Facility and infrastructure management in schools involves planning, organizing, maintaining, and monitoring physical resources to ensure their effective use [14], including classrooms, laboratories, libraries, sports facilities, and sanitation infrastructure; adequate management of these facilities ensures that students have access to safe, functional, and stimulating learning spaces, which directly affects their learning outcomes. Previous studies have emphasized the importance of facility and infrastructure management in education, with [11], [15] finding that well-maintained school facilities enhance students' motivation and concentration, while inadequate facilities lead to learning disruptions, and [16] arguing that schools with proper infrastructure management are better able to implement innovative teaching methods and accommodate diverse student needs. The theoretical foundation for this study is based on the Environmental Systems Theory, which posits that physical and organizational aspects of an environment influence human behavior and performance [17], [18].

2.3 *Student Discipline*

Student discipline is defined as the adherence to school rules, self-regulation, and appropriate behavioral conduct in the school setting [19], encompassing punctuality, respect for teachers and peers, completion of assignments, and responsible participation in classroom and extracurricular activities; high levels of student discipline contribute to a positive and orderly learning environment by reducing behavioral disruptions and supporting effective teaching and learning processes. Empirical studies have shown a strong link between student discipline and learning outcomes, with [11], [20] finding that disciplined students demonstrate higher engagement, better academic performance, and improved peer interactions, while [21], [22] noted that student discipline positively influences classroom management, enabling teachers to focus more on instructional activities rather than behavioral control. This relationship is further supported by Bandura's Social Learning Theory (1977), which asserts that behavior is learned through observation, reinforcement, and modeling, underscoring the role of school culture in shaping student discipline.

2.4 *Hypotheses Development*

The quality of the learning environment is shaped by both tangible and intangible factors, where facility and infrastructure management provides the physical foundation and student discipline ensures the behavioral and social order necessary for effective learning, with studies showing that schools combining well-managed facilities and disciplined student behavior experience higher learning effectiveness and improved academic outcomes. Facilities and infrastructure are pivotal in supporting academic and non-academic achievements, as effective management involving planning, procurement, maintenance, and utilization collectively enhances student performance [23], while the availability and quality of educational facilities significantly influence the success of teaching and learning activities, with properly managed infrastructure serving as an essential tool in facilitating these processes [24]. Furthermore, well-designed and adequately equipped school infrastructure contributes to creating conducive learning environments that are vital for student achievement and overall

educational quality [25]. The role of management is equally crucial, as comprehensive analysis, procurement, and maintenance of educational facilities ensure that resources are used effectively and efficiently [26], with studies such as Mumtahana et al. (2025) demonstrating that proper management of facilities at institutions like MAN 1 Samarinda plays a significant role in improving educational quality through the creation of safe and comfortable learning spaces. In the Indonesian context, however, research examining the combined effects of facility management and student discipline remains limited, as most studies assess these factors separately; therefore, this study addresses the existing gap by investigating their simultaneous influence on the quality of the learning environment in public high schools, offering insights for administrators and policymakers to optimize educational conditions. Based on the reviewed literature, the following hypotheses are proposed:

H1: Facility and infrastructure management positively affects the quality of the learning environment.

H2: Student discipline positively affects the quality of the learning environment.

3. METHODS

3.1 Research Design

This study employs a quantitative research design to examine the influence of facility and infrastructure management and student discipline on the quality of the learning environment in public high schools in Indonesia. Quantitative research is appropriate for this study because it allows for the measurement of relationships between variables using numerical data and statistical analysis, providing objective and generalizable results (Creswell, 2014). The study focuses on identifying the strength and direction of the relationships between the independent variables—facility and infrastructure management (X_1) and student discipline (X_2)—and the dependent variable, quality of the learning environment (Y).

3.2 Population and Sample

The population of this study consists of students enrolled in public high schools across several regions in Indonesia. A total of 250 students were selected as the sample using a purposive sampling technique. The criteria for inclusion were students who were actively enrolled in the current academic year and willing to participate in the study. The sample size of 250 is considered adequate for quantitative analysis and allows for the use of statistical methods such as multiple regression to test the hypotheses [27].

3.3 Data Collection Procedure

The study includes three primary variables: (1) Facility and Infrastructure Management (X_1), which measures the organization, availability, and maintenance of school facilities such as classrooms, laboratories, libraries, and sports facilities; (2) Student Discipline (X_2), which measures students' adherence to school rules, punctuality, classroom behavior, and overall self-regulation; and (3) Quality of the Learning Environment (Y), which assesses the extent to which the learning environment supports academic engagement through its physical, social, and psychological components. Data were collected using a structured questionnaire with items measured on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), divided into three sections representing each variable. All indicators were adapted from validated instruments in previous studies to ensure reliability and validity, and a pilot test conducted with 30 students showed Cronbach's alpha values exceeding 0.70 for all variables, indicating strong internal consistency [28].

Data collection was conducted over a four-week period, during which the questionnaire was distributed to selected students in their respective schools with the assistance of school administrators and teachers. Participants received a briefing on the purpose of the study, and informed consent was obtained to ensure ethical compliance. All responses were treated confidentially and used solely for research purposes, ensuring that students could provide honest and unbiased answers in a secure and supportive environment.

3.4 Data Analysis

The collected data were analyzed using SPSS version 25. Descriptive statistics, including mean, standard deviation, and frequency distribution, were used to summarize the demographic characteristics of respondents and variable scores. Inferential statistical analysis, specifically multiple linear regression, was employed to test the hypotheses and examine the influence of facility and infrastructure management (X_1) and student discipline (X_2) on the quality of the learning environment (Y). The assumptions of regression analysis, including normality, linearity, multicollinearity, and homoscedasticity, were tested to ensure the validity of the results. The significance level was set at 0.05 ($\alpha = 0.05$) for hypothesis testing.

4. RESULTS AND DISCUSSION

4.1 Demographic Profile of Respondents

The study involved 250 students from public high schools in Indonesia. Table 1 summarizes the demographic characteristics of the respondents.

Table 1. Demographic Characteristics of Respondents

Characteristic	Frequency	Percentage (%)
Gender		
Male	140	56
Female	110	44
Age Group		
15–16 years	120	48
17–18 years	130	52
Grade Level		
Grade 10	80	32
Grade 11	85	34
Grade 12	85	34

Table 1 presents the demographic characteristics of the 250 student respondents, illustrating a balanced representation across gender, age, and grade level. In terms of gender distribution, male students accounted for 56% of the sample (n = 140), while female students represented 44% (n = 110), indicating that the study captures perspectives from both groups without extreme dominance of one gender. The age distribution also reflects typical senior high school demographics in Indonesia, with 48% of respondents aged 15–16 years and 52% aged 17–18 years, showing an almost even split between mid-adolescence and late adolescence. This balance ensures that findings reflect the experiences of students at different developmental stages. Across grade levels, respondents were similarly distributed: Grade 10 students comprised 32% of the sample, Grade 11 students 34%, and Grade 12 students 34%. The near-equal proportions across grades strengthen the representativeness of the data, ensuring that perceptions of facility and infrastructure management, student discipline, and learning environment quality are not biased toward a particular academic level. Overall, the demographic composition of the respondents indicates that the dataset is diverse and well-distributed, supporting the generalizability of the study's findings within the context of public high school students.

4.2 Descriptive Statistics

The mean scores and standard deviations for the study variables are presented in Table 2.

Table 2. Descriptive Statistics of Study Variables

Variable	Mean	Standard Deviation
Facility and Infrastructure Management (X_1)	4.12	0.52
Student Discipline (X_2)	3.98	0.56
Quality of Learning Environment (Y)	4.05	0.54

Table 2 presents the descriptive statistics for the three study variables, showing generally high mean scores across facility and infrastructure management (X_1), student discipline (X_2), and the quality of the learning environment (Y). Facility and Infrastructure Management (X_1) recorded the highest mean value at 4.12 (SD = 0.52), indicating that students perceive their school facilities as well-organized, adequately maintained, and sufficiently supportive of learning activities. The relatively low standard deviation suggests consistent perceptions among respondents, reflecting uniform experiences regarding the physical school environment. Student Discipline (X_2) obtained a mean score of 3.98 (SD = 0.56), illustrating positive student behavior, adherence to school rules, and self-regulation, though slightly lower than facility management. This result may imply variations in behavioral discipline across different students or grade levels, as indicated by the slightly higher standard deviation. The Quality of the Learning Environment (Y) shows a mean score of 4.05 (SD = 0.54), suggesting that students generally view their learning environment as conducive, with adequate physical, social, and psychological support for academic engagement. The closeness of the mean values among the three variables supports the theoretical expectation that well-maintained facilities and good student discipline collectively contribute to a positive learning environment. Overall, the descriptive results reflect favorable conditions within the participating schools and provide a strong foundation for further analysis of the relationships among the variables in the subsequent sections.

4.3 Reliability and Validity

A reliability test using Cronbach's alpha confirmed that all variables exceeded the recommended threshold of 0.70, indicating strong internal consistency across the measurement instruments, with Facility and Infrastructure Management (X_1) showing $\alpha = 0.854$, Student Discipline (X_2) showing $\alpha = 0.822$, and Quality of the Learning Environment (Y) showing $\alpha = 0.882$. In addition, validity was ensured through pilot testing, which demonstrated that all questionnaire items accurately measured their respective constructs.

4.4 Multiple Regression Analysis

Multiple linear regression was performed to examine the influence of facility and infrastructure management (X_1) and student discipline (X_2) on the quality of the learning environment (Y). Table 3 presents the regression results.

Table 3. Multiple Regression Analysis

Variable	B	Std. Error	Beta	t	p-value
Constant	0.512	0.202	—	2.535	0.012
Facility and Infrastructure Management (X_1)	0.421	0.065	0.435	6.477	0.000
Student Discipline (X_2)	0.367	0.062	0.389	5.919	0.000

Table 3 presents the results of the multiple regression analysis examining the influence of Facility and Infrastructure Management (X_1) and Student Discipline (X_2) on the Quality of the Learning Environment (Y). The model indicates that both independent variables significantly contribute to predicting the learning environment, as shown by their positive coefficients and highly

significant p-values (p < 0.001). Facility and Infrastructure Management (X_1) demonstrates a strong positive effect with B = 0.421, β = 0.435, and t = 6.477, suggesting that improvements in the organization, maintenance, and availability of school facilities substantially enhance the quality of the learning environment. Similarly, Student Discipline (X_2) shows a meaningful positive influence with B = 0.367, β = 0.389, and t = 5.919, indicating that higher levels of student self-regulation, adherence to rules, and appropriate behavior contribute significantly to a more conducive learning atmosphere. The constant value (B = 0.512, p = 0.012) further reinforces that even when the predictors are controlled, a baseline level of learning environment quality persists, confirming that physical resource management and student behavioral factors play complementary roles in shaping learning conditions.

The regression model is statistically significant (F = 62.58, p < 0.001), indicating a strong overall fit. The R^2 value of 0.56 shows that 56% of the variance in the quality of the learning environment can be explained by the two independent variables, demonstrating substantial explanatory power for a social science model. Both facility and infrastructure management (β = 0.435, p < 0.001) and student discipline (β = 0.389, p < 0.001) exert positive and significant effects, reinforcing that well-maintained school facilities and disciplined student behavior are essential components in fostering a supportive and effective learning environment.

Discussion

The findings of this study demonstrate that both facility and infrastructure management and student discipline play crucial roles in enhancing the quality of the learning environment in public high schools in Indonesia. The positive influence of facility and infrastructure management (β = 0.435) indicates that well-maintained classrooms, libraries, laboratories, and other educational facilities create a supportive and motivating atmosphere for students, consistent with previous studies showing that proper management of school facilities enhances learning and student engagement [29], [30]. Likewise, the significant effect of student discipline (β = 0.389) emphasizes the essential role of orderly and respectful behavior in fostering a productive learning environment. Disciplined students reduce disruptions, increase academic engagement, and contribute to a positive school climate, supporting theoretical insights from the Social Learning Theory (Bandura, 1977) and findings from Indonesian research [31]. Together, these results highlight the combined effect of physical resource quality and behavioral management, showing that schools investing in both areas are more likely to achieve improved educational outcomes.

Overall, this study provides strong empirical evidence for policymakers, school leaders, and teachers to enhance learning conditions by integrating strategies for effective facility and infrastructure management with initiatives that strengthen student discipline. A holistic approach that simultaneously addresses environmental and behavioral determinants of learning is essential for building a high-quality educational ecosystem. Administrators should therefore prioritize regular maintenance of facilities, upgrading resources, and strategic planning, while also implementing mentoring programs, counseling services, and reward systems to promote self-discipline. By aligning these efforts, public high schools in Indonesia can create learning environments that better support academic success and overall student development.

CONCLUSION

This study concludes that both facility and infrastructure management and student discipline significantly influence the quality of the learning environment in public high schools in Indonesia, as effective management of school facilities ensures that physical resources are functional, safe, and supportive of learning activities, while disciplined student behavior fosters order, engagement, and academic focus; together, these factors account for 56% of the variance in the quality of the learning environment, demonstrating the importance of a combined approach that addresses both physical and behavioral dimensions. Based on these findings, school administrators

and policymakers should prioritize regular maintenance and upgrading of school facilities including classrooms, laboratories, libraries, and sports facilities—along with implementing programs that promote student discipline, such as mentoring, counseling, and reward systems for positive behavior, within a holistic strategy that integrates facility management and student behavioral development to optimize learning outcomes. Future research could explore additional factors influencing the learning environment, such as teacher quality, classroom management practices, and parental involvement, to provide a more comprehensive understanding of the determinants of educational quality in Indonesia.

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