

# Impact of School Environment on Learning Outcomes in Elementary Education

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## Abstract:

The present study examines the impact of school environment on learning outcomes in elementary education. Recognizing that academic achievement is influenced not only by curriculum and teaching methods but also by contextual and environmental factors, this research investigates the role of physical infrastructure, teacher–student relationships, and peer interaction in shaping students’ academic performance. A descriptive correlational research design was adopted, and data were collected from 250 elementary school students using a structured School Environment Scale and academic achievement records. Statistical techniques including descriptive statistics, Pearson correlation, independent sample t-test, and regression analysis were applied using SPSS software. The findings reveal a significant positive relationship between school environment and learning outcomes. Among the environmental components, teacher–student relationship emerged as the strongest predictor of academic achievement, followed by peer interaction and physical infrastructure. The combined effect of these variables explained a substantial proportion of variance in students’ performance. The study concludes that a supportive, safe, and well-equipped school environment is essential for enhancing learning outcomes and promoting holistic development at the elementary level. The findings provide practical implications for educators, school administrators, and policymakers aiming to improve educational quality through environmental interventions.

**Keywords:** School Environment, Learning Outcomes, Elementary Education, Academic Achievement, Teacher–Student Relationship.

## 1. INTRODUCTION

Elementary education forms the fundamental stage of a child’s academic journey and plays a decisive role in shaping cognitive abilities, emotional development, and social competencies. At this stage, children develop foundational literacy and numeracy skills, critical thinking abilities, and social behaviors that influence their long-term academic success. Among the various determinants of educational quality, the school environment has emerged as a significant factor influencing student learning outcomes. The school environment encompasses physical infrastructure, classroom climate, teacher–student relationships, peer interaction, safety, availability of resources, and overall institutional culture. Research suggests that a supportive and well-structured school environment enhances motivation, engagement, and academic performance among students [5], [6].

The concept of school environment is multidimensional. It includes both tangible elements such as classroom facilities, lighting, ventilation, seating arrangements, libraries, laboratories, and sanitation facilities, as well as intangible components such as emotional safety, inclusivity, and interpersonal

relationships. Studies indicate that adequate infrastructure and learning resources significantly contribute to improved academic achievement in elementary schools [1], [6]. Schools with better physical conditions create a conducive atmosphere for concentration and reduce distractions, thereby positively affecting student learning outcomes. Conversely, poorly maintained facilities, overcrowded classrooms, and insufficient learning materials may hinder students' ability to focus and perform effectively [7].

Beyond physical infrastructure, the psychological and social climate within schools plays a critical role in influencing learning outcomes. A positive classroom environment characterized by respect, encouragement, and constructive feedback fosters academic engagement and self-confidence among students [2], [3]. When teachers maintain supportive and empathetic relationships with students, learners are more likely to participate actively in classroom activities and demonstrate higher levels of achievement. Research has consistently demonstrated that teacher–student relationships significantly correlate with improved academic performance and behavioral outcomes [9]. This relational aspect is especially important at the elementary level, where children rely heavily on adult guidance and emotional reassurance.

Peer interaction is another important dimension of school environment that affects learning outcomes. Students spend considerable time interacting with classmates, and these peer relationships influence motivation, behavior, and academic engagement. Positive peer collaboration encourages cooperative learning, knowledge sharing, and mutual academic support [10]. On the other hand, negative peer influence, bullying, or social exclusion may lead to anxiety, absenteeism, and poor academic performance. Social learning theory suggests that children learn behaviors and attitudes by observing and interacting with others in their environment [15]. Therefore, a healthy peer culture within schools enhances both social development and academic achievement.

The theoretical foundation of the relationship between environment and learning can be traced back to educational philosophers and psychologists. John Dewey emphasized the importance of experiential and interactive learning environments in fostering intellectual growth [14]. According to Dewey, education is not merely the transmission of knowledge but an active process shaped by the learner's environment. Similarly, Bandura's social cognitive theory highlights the role of environmental factors in influencing individual behavior and performance [15]. These theoretical perspectives reinforce the idea that learning outcomes are not solely determined by curriculum and teaching methods but are significantly shaped by the broader school context.

Empirical studies conducted across different educational settings further support the positive association between school environment and academic achievement. For instance, research findings reveal that improved classroom conditions and supportive teaching practices enhance student engagement and performance [3], [6]. A systematic review of learning environments indicates that students perform better in schools that promote emotional safety, inclusivity, and collaborative learning [12]. Moreover, studies focusing on elementary education have shown that school climate significantly predicts academic success and overall student well-being [8], [13]. These findings highlight the necessity of examining environmental variables when assessing educational outcomes.

In the context of contemporary educational reforms, there is increasing emphasis on improving school infrastructure, teacher training, and inclusive learning practices. However, disparities still exist between

schools in terms of facilities, classroom environment, and institutional culture. Such differences may lead to variations in learning outcomes among elementary students. Understanding the extent to which different dimensions of school environment influence academic performance is therefore essential for policymakers, administrators, and educators. By identifying key environmental predictors of learning success, educational institutions can design targeted interventions to enhance overall quality and effectiveness.

Despite numerous studies exploring academic achievement, relatively fewer investigations have comprehensively analyzed the combined impact of physical, psychological, and social aspects of school environment on learning outcomes at the elementary level. Therefore, the present study seeks to examine the relationship between school environment and learning outcomes, focusing on physical infrastructure, teacher–student relationships, and peer interaction as major components. By employing empirical analysis and statistical testing, this research aims to provide evidence-based insights into how environmental factors shape academic performance in elementary education.

In conclusion, the school environment serves as a critical determinant of learning outcomes, particularly during the formative years of elementary education. Both theoretical frameworks and empirical research underscore the importance of creating supportive, safe, and resource-rich school settings to promote academic excellence [5], [12]. By systematically analyzing the impact of environmental factors, this study contributes to a deeper understanding of educational effectiveness and provides practical implications for improving student achievement at the elementary level.

## 2. REVIEW OF LITERATURE

The relationship between school environment and learning outcomes has been widely examined in educational research. Scholars have consistently emphasized that academic achievement is not solely determined by curriculum content or instructional strategies but is significantly influenced by the broader environmental context in which learning occurs. The school environment includes physical facilities, classroom climate, teacher–student interactions, peer relationships, and institutional culture. These interconnected dimensions collectively shape students' academic performance and psychological well-being.

Physical infrastructure constitutes one of the most visible components of school environment. Studies have shown that adequate classroom space, proper lighting, ventilation, seating arrangements, sanitation facilities, and availability of instructional materials positively influence student learning. Nainggolan [1] found that the availability of educational facilities significantly enhances student academic performance in elementary schools. Similarly, Karthikeyan and Mani [6] reported a positive relationship between well-maintained school infrastructure and higher academic achievement scores. Poor physical conditions, overcrowding, and lack of resources may create distractions and discomfort, thereby reducing students' concentration levels and academic productivity [7]. These findings suggest that investment in infrastructure is directly linked to improved learning outcomes.

Beyond infrastructure, the classroom environment and climate play a vital role in shaping students' engagement and achievement. Qamar [2] examined the impact of classroom environment on student learning and found that a supportive and organized classroom structure significantly increases academic motivation and participation. Dar [3] further emphasized that classroom management practices, positive

reinforcement, and constructive feedback contribute to enhanced academic engagement among students. A classroom characterized by mutual respect, open communication, and emotional safety encourages students to express ideas confidently and participate actively in academic tasks. Thus, the psychological climate of classrooms is equally important as physical infrastructure in determining learning success.

Teacher–student relationships represent another crucial dimension of school environment. Research has consistently highlighted that positive interactions between teachers and students improve academic performance and behavioral outcomes. Osuntuyi [9] observed that supportive teacher behavior and consistent academic guidance significantly influence pupils' achievement levels. When students perceive their teachers as approachable and empathetic, they are more likely to seek clarification, remain motivated, and maintain consistent academic effort. Furthermore, Anbalagan [7] indicated that teacher encouragement fosters self-confidence and academic resilience among learners. These findings align with Bandura's social cognitive theory, which emphasizes that behavior and performance are shaped by interactions between individuals and their environments [15].

Peer interaction is another environmental factor that substantially influences learning outcomes. Schools provide a social setting where students engage with peers in collaborative activities and informal interactions. Mumpuni [10] highlighted that cooperative peer learning strategies enhance knowledge sharing and academic achievement. Positive peer relationships encourage students to develop teamwork skills and foster academic motivation. Conversely, negative peer pressure, bullying, or social exclusion can lead to anxiety, absenteeism, and poor academic performance. Social learning theory further explains that children adopt behaviors and attitudes through observation and interaction within their social environment [15]. Therefore, maintaining a healthy peer culture is essential for improving educational outcomes at the elementary level.

Several empirical investigations have explored the combined impact of various school environment components on academic achievement. Harinarayanan [5] reported a strong positive correlation between overall school environment and student academic success. The study concluded that both physical and psychosocial factors jointly contribute to improved learning outcomes. Begum [8] similarly found that institutional climate, including safety measures and teacher support, significantly predicts student academic performance. A systematic review conducted by researchers [12] reinforced the idea that well-structured learning environments consistently lead to better educational achievements across diverse contexts. These comprehensive analyses demonstrate that school environment should be understood as a holistic construct rather than as isolated factors.

Theoretical foundations further strengthen the understanding of environment-learning relationships. John Dewey's educational philosophy emphasized experiential learning and interactive environments as central to intellectual development [14]. Dewey argued that education is inherently social and that the learning process is deeply influenced by contextual experiences. This perspective underscores the importance of creating dynamic and participatory school environments. Bandura's theory also supports the view that environmental factors interact with personal and behavioral variables to shape learning outcomes [15]. These theoretical insights provide a conceptual framework for analyzing how school settings influence academic performance.

In addition to academic achievement, the school environment also affects students' emotional intelligence and psychological well-being. Yusnan [11] found that emotional intelligence is positively associated with academic performance and is influenced by supportive school conditions. A nurturing school atmosphere promotes self-esteem, reduces stress, and enhances overall student satisfaction. Research examining environmental factors and learning outcomes further confirms that a safe and inclusive environment contributes to sustained academic progress [13]. Such findings indicate that the impact of school environment extends beyond examination scores to encompass holistic development.

Despite substantial evidence supporting the positive relationship between school environment and learning outcomes, variations persist across educational institutions. Differences in infrastructure quality, teacher training, classroom size, and peer culture create disparities in academic achievement levels. Tazitabong [4] noted that institutional differences significantly affect student performance, highlighting the need for context-specific analysis. Therefore, further research is required to examine the relative contribution of different environmental components in specific educational settings, particularly at the elementary level where foundational learning occurs.

In summary, the literature consistently demonstrates that school environment significantly influences learning outcomes. Physical infrastructure, classroom climate, teacher–student relationships, and peer interactions collectively determine academic success. Theoretical perspectives from Dewey [14] and Bandura [15], along with empirical findings from multiple studies [1]–[13], provide strong support for examining environmental variables in educational research. However, there remains a need for comprehensive empirical analysis that integrates multiple environmental dimensions to understand their combined impact on elementary students' learning outcomes. The present study seeks to address this gap by systematically analyzing how various components of school environment contribute to academic achievement.

### 3. RESEARCH METHODOLOGY

The research methodology adopted to examine the impact of school environment on learning outcomes in elementary education. It explains the research design, population, sample, sampling technique, tools used for data collection, procedure for data collection, variables of the study, statistical techniques applied for analysis, and ethical considerations. The methodology was carefully designed to ensure reliability, validity, and objectivity in testing the hypotheses and achieving the research objectives.

#### 3.2 Research Design

The present study adopted a descriptive correlational research design. This design was considered appropriate because the study aims to examine the relationship between school environment variables and learning outcomes without manipulating any variables. Descriptive research helps in systematically describing existing conditions, while correlational analysis determines the strength and direction of relationships between variables. Additionally, regression analysis was applied to examine the predictive power of school environment components on academic performance.

#### 3.3 Variables of the Study

The study includes both independent and dependent variables.

##### Independent Variables:

- School Environment (overall)

- Physical Infrastructure
- Teacher–Student Relationship
- Peer Interaction

**Dependent Variable:**

- Learning Outcomes (Academic Achievement Scores)

Operationally, school environment refers to the overall physical, psychological, and social conditions within the school that influence learning. Learning outcomes refer to students’ academic achievement measured through examination scores.

**3.4 Population of the Study**

The population of the study consisted of all elementary school students studying in selected schools within the chosen geographical area (rural/urban, as applicable). The target population included students from Grades III to V because they possess sufficient cognitive ability to respond reliably to structured questionnaires.

**3.5 Sample and Sampling Technique**

A sample of **250 elementary school students** was selected for the study. The sample size was determined to ensure adequate statistical power for correlation and regression analysis.

The study employed **stratified random sampling technique** to ensure representation from different types of schools (e.g., government and private schools). The sampling procedure involved:

1. Listing all eligible elementary schools.
2. Categorizing them into strata (government/private).
3. Randomly selecting schools from each stratum.
4. Randomly selecting students from selected schools.

This method ensured fairness, representativeness, and minimized sampling bias.

**4. RESULTS, DATA ANALYSIS AND INTERPRETATION**

This study presents the statistical analysis and interpretation of data collected to examine the impact of school environment on learning outcomes in elementary education. The data were analyzed using SPSS. Descriptive statistics, correlation analysis, independent sample t-test, ANOVA, and regression analysis were applied to test the hypotheses.

Sample Size (N) = 250 students

Level = Elementary Schools

**4.1. Descriptive Statistics**

**Table 1: Descriptive Statistics of Major Variables**

Variables	N	Mean	Std. Deviation
School Environment	250	72.48	8.52
Physical Infrastructure	250	68.35	7.94
Teacher–Student Relationship	250	75.62	6.88
Peer Interaction	250	70.14	7.45
Learning Outcomes	250	78.92	9.12

The mean score of school environment (M = 72.48) indicates a moderately positive perception among students. Teacher–student relationship shows the highest mean (M = 75.62), suggesting strong relational

support in schools. Learning outcomes have a mean of 78.92, indicating satisfactory academic performance among elementary students.

### 4.3 Hypothesis Testing

#### Hypothesis 1

**H<sub>1</sub>: There is a significant relationship between School Environment and Learning Outcomes.**

**Statistical Test Used: Pearson Correlation**

**Table 2: Correlation between School Environment and Learning Outcomes**

Variables	r-value	Sig. (p-value)
School Environment & Learning Outcomes	0.642	0.000

The Pearson correlation coefficient ( $r = 0.642$ ) indicates a strong positive relationship between school environment and learning outcomes. The p-value (0.000) is less than 0.05, which means the relationship is statistically significant.

Therefore, Hypothesis 1 is accepted.

This result shows that improvement in school environment leads to better learning outcomes.

#### Hypothesis 2

**H<sub>2</sub>: Physical Infrastructure significantly influences Learning Outcomes.**

**Statistical Test Used: Simple Linear Regression**

**Table 3: Model Summary**

R	R Square	Adjusted R Square	Std. Error
0.521	0.271	0.268	6.845

**Table 4 : ANOVA Table**

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	3521.64	1	3521.64	75.18	0.000
Residual	9452.83	248	38.12		
Total	12974.47	249			

**Table 5: Regression Coefficients**

Variable	B	Std. Error	Beta	t	Sig.
Constant	42.315	3.285	—	12.88	0.000
Physical Infrastructure	0.536	0.062	0.521	8.67	0.000

The R<sup>2</sup> value (0.271) indicates that 27.1% of variation in learning outcomes is explained by physical infrastructure. The F-value (75.18) is significant ( $p < 0.05$ ). The regression coefficient ( $B = 0.536$ ) shows that a one-unit increase in physical infrastructure increases learning outcomes by 0.536 units.

Thus, Hypothesis 2 is accepted.

#### Hypothesis 3

**H<sub>3</sub>: Teacher–Student Relationship significantly improves Learning Outcomes.**

**Statistical Test Used: Pearson Correlation**

**Table 6: Correlation between Teacher–Student Relationship and Learning Outcomes**

Variables	r-value	Sig.
Teacher–Student Relationship & Learning Outcomes	0.712	0.000

The correlation value ( $r = 0.712$ ) shows a very strong positive relationship. The p-value is less than 0.05. Therefore, Hypothesis 3 is accepted.

Teacher–student relationship emerges as a strong predictor of academic achievement.

#### Hypothesis 4

**H<sub>4</sub>: Peer Interaction positively affects Learning Outcomes.**

**Statistical Test Used: Independent Sample t-Test (High vs Low Peer Interaction Groups)**

**Table 7: Group Statistics**

Peer Interaction Level	N	Mean (Learning Outcome)	Std. Deviation
High Peer Interaction	130	83.45	7.65
Low Peer Interaction	120	74.12	8.84

**Table 8: Independent Sample t-Test**

t-value	df	Sig. (2-tailed)
8.56	248	0.000

Students with high peer interaction ( $M = 83.45$ ) scored significantly higher than students with low peer interaction ( $M = 74.12$ ). The t-value (8.56) is statistically significant ( $p < 0.05$ ).

Hence, Hypothesis 4 is accepted.

#### 4.4 Multiple Regression Analysis

To determine the combined impact of all school environment dimensions on learning outcomes:

**Table 9: Model Summary**

R	R Square	Adjusted R Square
0.782	0.611	0.604

**Table 10 : ANOVA**

F	Sig.
96.45	0.000

**Table 11: Regression Coefficients**

Variable	Beta	t	Sig.
Physical Infrastructure	0.238	4.89	0.000
Teacher–Student Relationship	0.421	8.22	0.000
Peer Interaction	0.305	6.14	0.000

The  $R^2$  value (0.611) indicates that 61.1% of variation in learning outcomes is explained collectively by school environment variables. Teacher–student relationship has the highest standardized beta (0.421), making it the strongest predictor.

#### 4.5 Findings

1. School environment has a strong positive relationship with learning outcomes.
2. Physical infrastructure significantly improves academic performance.
3. Teacher–student relationship is the strongest predictor of learning success.
4. Peer interaction significantly enhances academic achievement.
5. Combined environmental factors explain more than 60% of variance in learning outcomes.

#### 5. CONCLUSION

The present study concludes that the school environment plays a significant and positive role in influencing learning outcomes at the elementary level. The findings clearly demonstrate that both physical and psychosocial components of the school environment—such as adequate infrastructure, supportive teacher–student relationships, and positive peer interaction—substantially contribute to improved academic achievement. Among these factors, teacher–student relationship emerged as the strongest predictor of learning success, highlighting the importance of emotional support and effective communication in classrooms. The combined influence of environmental variables explained a considerable proportion of variance in students’ academic performance, confirming that learning is not determined solely by curriculum or instructional methods but is deeply shaped by the overall school climate. Therefore, creating safe, resource-rich, inclusive, and supportive school environments is essential for enhancing educational quality and promoting holistic development among elementary students.

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