



## INTRODUCTION

The quality of education provided in schools is influenced by multiple interrelated factors, among which the school physical environment plays a fundamental role. The school physical environment refers to the tangible, built, and spatial conditions within which teaching and learning occur, including classrooms, laboratories, libraries, sanitation facilities, furniture, lighting, ventilation, safety systems, and aesthetic features (Barrett et al., 2015; Maxwell, 2016). These components collectively determine the conduciveness of the learning environment and influence student engagement and achievement (Ministry of Education [MoE], 2023; Kenya Institute of Curriculum Development [KICD], 2022).

It also encompasses the design, organization, accessibility, and maintenance of school facilities, which collectively determine the conduciveness of the learning environment (Uline & Tschannen-Moran, 2008). For instance, a study in Kenya found that school infrastructure significantly influences student completion rates, with inadequate facilities negatively affecting retention and academic progression (Ndayi et al., 2024).

Similarly, infrastructure development—including electrification and improved learning spaces—has been associated with improved educational outcomes (Muthengi et al., 2025). Research on school electrification in rural Kenya demonstrated that improved physical infrastructure—such as access to electricity—enhances student performance, enrollment, and completion outcomes. At a broader level, national spatial analyses reveal that disparities in access to school facilities—termed “education deserts”—continue to limit enrollment and learning opportunities, particularly in rural and marginalized regions.

Within the context of Adventist education, the concept of the physical environment extends beyond functional infrastructure to include spiritual and moral dimensions of space. The Education by Ellen G. White emphasizes that true education involves the harmonious development of the physical, mental, and spiritual powers, suggesting that the learning environment should intentionally support holistic growth. Similarly, the Seventh-day Adventist Church

education philosophy underscores that school environments should reflect order, cleanliness, beauty, and reverence (General Conference of Seventh-day Adventists, 2010). In Adventist secondary schools, therefore, the physical environment includes not only academic and residential facilities but also worship spaces that nurture spiritual life, reinforcing the integration of faith and learning.

Despite its importance, limited empirical research has focused on how the physical environment influences the provision of quality education within Adventist secondary schools in the East Kenya Union Conference (EKUC).

The study was guided by the following research questions: To what extent does the school's physical environment influence the provision of quality education in Adventist secondary schools in EKUC? How do specific components of the physical environment (e.g., safety, classroom design, sanitation, and worship facilities) affect student learning and teacher effectiveness? What are teachers' and administrators' perceptions of the adequacy of school physical facilities? What physical environment factors are prioritised in Adventist secondary schools within EKUC?

## Theoretical Framework

This study is anchored on the Environmental Psychology Theory and the Systems Theory.

### Environmental Psychology Theory

Environmental Psychology Theory posits that the physical environment significantly influences human behaviour, cognition, and well-being. In educational settings, factors such as lighting, ventilation, space, and aesthetics directly affect students' concentration, motivation, and academic performance (Basit, 2005). This theory supports the idea that a conducive learning environment enhances both teaching and learning processes.

### Systems Theory

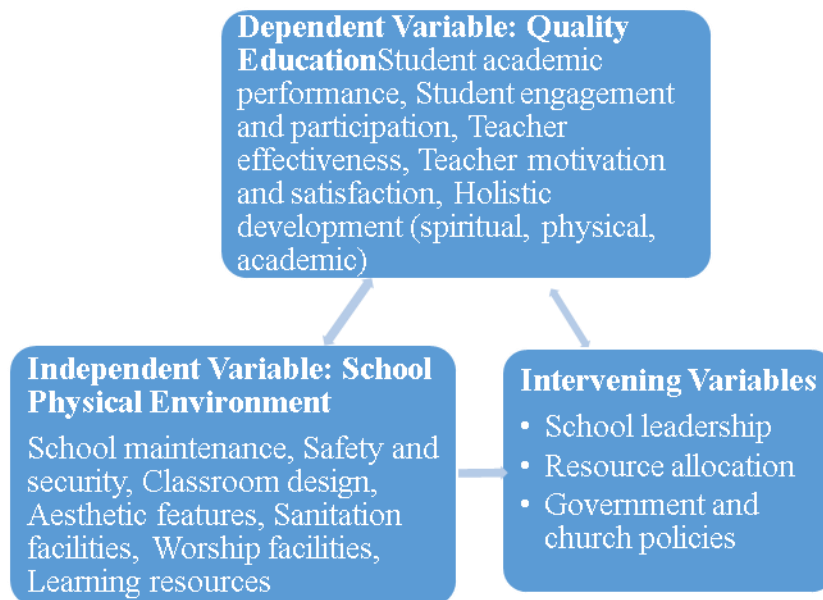
Systems Theory views a school as an interconnected system where various components—including infrastructure, teachers, students, leadership, and policy frameworks—interact to produce educational outcomes. Within this system, the physical

environment functions as a critical subsystem that influences teaching effectiveness, learning processes, and overall institutional performance. Poor infrastructure disrupts system balance, while well-developed facilities enhance efficiency and educational productivity (Ministry of Education, 2023; KNUT, 2022).

Together, these theories explain how physical environments shape educational outcomes and justify the need for investment in school infrastructure.

## Conceptual Framework

The conceptual framework illustrates the relationship between the school's physical environment (independent variable) and the provision of quality education (dependent variable).



**Figure 1: Conceptual Framework**

## Relationship

A well-maintained, safe, and resourceful physical environment positively influences the provision of quality education.

laboratories—positively predicts academic achievement in Kenyan schools.

## LITERATURE REVIEW

### School Physical Environment and Student Achievement

Research indicates a strong relationship between school facilities and student academic outcomes. Recent Kenyan studies confirm that school infrastructure significantly influences student academic outcomes. According to the Ministry of Education (2023), schools with adequate and well-maintained facilities report higher student performance and improved retention rates. Similarly, Muthengi et al. (2025) found that infrastructure development—particularly classrooms and

### Classroom Design and Learning

The design and arrangement of classroom spaces significantly influence learning. The Kenya Institute of Curriculum Development (KICD, 2022) emphasizes that learner-centered classrooms require flexible layouts, adequate lighting, and appropriate furniture to support competency-based education. In addition, Waweru and Kiprono (2021) found that well-organized classroom spaces enhance student interaction and participation in Kenyan secondary schools. Flexible seating arrangements and proper lighting enhance participation and engagement.

### Environmental Comfort and Student Performance

Environmental factors such as ventilation, acoustics, and ergonomics are essential for effective learning.

Basit (2005) highlighted that uncomfortable learning environments reduce students' ability to concentrate. A study by Ndirangu and Otieno (2022) in Kenyan secondary schools revealed that poor ventilation and overcrowded classrooms negatively impact student concentration and academic performance. Similarly, the Ministry of Health (2021) highlights that inadequate sanitation facilities contribute to absenteeism, particularly among female.

## Teacher Motivation and School Environment

The physical environment also affects teacher morale and performance. Lyons (2001) found that teachers working in well-maintained schools report higher job satisfaction and are more effective in instructional delivery. Poor infrastructure, on the other hand, contributes to burnout and low productivity. According to Manduku (2022), poor infrastructure contributes to teacher dissatisfaction and high turnover in Adventist schools in Kenya. Conversely, well-maintained facilities enhance teacher morale and instructional effectiveness.

## Infrastructure and Educational Equity

Infrastructure disparities remain a major challenge in achieving equitable education in Kenya. The Kenya National Bureau of Statistics (KNBS, 2023) reports significant inequalities in access to school facilities between urban and rural regions. In the Adventist context, Kamundi (2021) found that inadequate infrastructure negatively affects student retention in EKUC schools.

Beyond Adventist-specific research, broader empirical studies in Kenya have confirmed that infrastructure quality is a key determinant of educational outcomes. For example, Muthengi et al. (2025) found in a Kenyan junior school study that infrastructure development predicted academic performance more strongly than other administrative variables, with adequate classrooms and functional laboratories significantly improving student results. Such findings align with the view that physical facilities are foundational to learning regardless of sponsorship context (Muthengi et al., 2025).

## Faith-Based School Environments

In Adventist education, the physical environment includes spiritual infrastructure such as chapels and

worship spaces. These facilities play a critical role in promoting moral and spiritual development, which is central to the philosophy of Adventist education.

## METHODOLOGY

A descriptive survey design was adopted. The study targeted teachers in Adventist secondary schools within EKUC, with a sample size of 88 respondents. Data were collected using questionnaires and interviews and analysed using descriptive statistics. A descriptive survey design was chosen because the study sought to systematically describe and quantify existing conditions of the school's physical environment and their perceived influence on the provision of quality education, without manipulating any variables.

This design is suitable for investigating environmental factors for several reasons. First, it allows the researcher to collect data from teachers within their natural school settings, providing an accurate picture of existing physical facilities such as classrooms, sanitation, safety, and worship spaces. Second, environmental factors are often best understood through the perceptions of those who interact with them daily.

A survey design enables the collection of teachers' views on how these physical conditions influence teaching effectiveness and student learning. Third, by using structured questionnaires, the design facilitates the use of descriptive statistics (e.g., means and standard deviations) to summarise trends and levels of agreement regarding environmental adequacy and impact. Fourth, it enables data collection from multiple schools and respondents, enhancing the generalizability of findings across Adventist secondary schools in the EKUC. Finally, since the study does not seek to establish cause-and-effect relationships but rather to assess the extent and nature of influence, a descriptive approach is appropriate.

## Interpretation Scale

- 1.00–1.49 = Strongly Disagreed
- 1.50–2.49 = Disagreed
- 2.50–3.49 = Agreed
- 3.50–4.00 = Strongly Agreed

## FINDINGS AND DISCUSSION

The results of the study are presented below using descriptive statistics to show teachers' perceptions of the school physical environment and its influence on the provision of quality education in Adventist

secondary schools within the East Kenya Union Conference (EKUC). The findings highlight the level of agreement across key indicators such as safety, maintenance, classroom design, and infrastructure adequacy. The findings are displayed in Table 1 below.

**Table 1: Descriptive Statistics on School Physical Environment (n = 88)**

Statement	Mean (M)	Std. Deviation (SD)	Interpretation
Well-maintained environment	3.61	0.490	Strongly Agreed
Safe and secure environment	3.59	0.517	Strongly Agreed
Furniture arrangement	3.53	0.502	Strongly Agreed
Aesthetic environment	3.55	0.501	Strongly Agreed
Comfortable seating	3.44	0.564	Agreed
Flexible layout	3.40	0.558	Agreed
Teacher morale	3.42	0.638	Agreed
Infrastructure investment	3.39	0.685	Agreed
<b>Overall Mean</b>	<b>3.47</b>	<b>0.566</b>	<b>Agreed</b>

### Discussion

The findings confirm that the school physical environment significantly influences the provision of quality education. The strong emphasis on safety, maintenance, and classroom design aligns with Kenyan policy and empirical studies (MoE, 2023; KICD, 2022). Furthermore, Manduku (2022) demonstrates that inadequate infrastructure contributes to teacher dissatisfaction and instability in Adventist schools, reinforcing the current study's findings on teacher morale.

Kamundi's (2021) investigation into student retention in SDA schools within EKUC shows that resource limitations, which include infrastructure deficits, negatively impact student retention—a key proxy for educational quality. Lower retention rates ultimately compromise teaching continuity, academic performance, and long-term school viability. This aligns with the current study's findings that physical facilities are central to enabling sustained learning environments.

Nyabwari's (2016) research on holistic Christian education reinforces the notion that infrastructure supporting spiritual, physical, and intellectual development is essential in the Adventist context. The emphasis on physical spaces for worship, physical activity, and learning further validates the literature's claim that the physical environment transcends merely

functional considerations. It embodies the holistic educational philosophy that characterizes Adventist schooling.

The study in Ghana by Akuoko-Nyantakyi et al. (2023) complements these findings by showing that inadequate infrastructure impedes academic performance and competitiveness in government-assisted Adventist schools. This suggests that infrastructure challenges are not unique to Kenya but are shared across African Adventist settings where funding and resource constraints prevail.

Furthermore, the broader Kenyan empirical work by Muthengi et al. (2025) underscores the importance of infrastructure development as a critical predictor of student achievement. This finding parallels the current study's assertion that investment in physical facilities correlates with improved educational outcomes.

Finally, although the study by Chewen et al. (2020) did not find a direct effect of infrastructure on student discipline, it highlights that physical environment is part of a broader school climate that influences learning. This supports the Systems Theory.

The results also validate Environmental Psychology Theory, which explains how physical conditions affect behavior and learning, and Systems Theory, which

highlights the interconnectedness of school components.

In the Adventist context, White (1903/2002) and the General Conference (2010) emphasize that physical environments should support holistic education, integrating spiritual and academic development. This perspective reinforces the importance of worship facilities highlighted in the study findings.

## CONCLUSION AND RECOMMENDATIONS

**Conclusion:** The study concludes that the physical environment plays a critical role in enhancing educational quality in Adventist secondary schools. Investment in infrastructure is essential for improving both student outcomes and teacher performance.

**Recommendations:** The study recommends increased investment in school infrastructure to enhance the overall quality of education in Adventist secondary schools. Adequate resources should be allocated toward the construction, expansion, and improvement of essential physical facilities such as classrooms, libraries, laboratories, sanitation areas, and worship spaces. Improved infrastructure creates a more conducive learning environment, supports effective teaching, and positively influences students' academic outcomes.

It is also recommended that schools improve maintenance and safety standards within their physical

environments. Existing facilities should be regularly inspected, repaired, and maintained to ensure that they remain functional, safe, and supportive of teaching and learning activities. Particular attention should be given to classroom safety, sanitation, lighting, ventilation, and the general security of the school compound so as to promote the well-being of both learners and staff.

Further, schools should enhance classroom design to support flexible learning. Classrooms should be arranged and equipped in ways that accommodate different teaching methods, learning styles, and student needs. This includes ensuring adequate space, appropriate furniture, proper lighting, and layouts that encourage interaction, collaboration, and learner engagement. A flexible classroom environment can significantly improve both teacher effectiveness and student participation.

Finally, there is a need to balance spiritual and physical development facilities within Adventist secondary schools. While spiritual growth remains a core component of Adventist education, equal attention should be given to the provision and improvement of physical facilities that support academic, social, and co-curricular development. Facilities such as worship spaces, sports grounds, classrooms, and recreational areas should be adequately provided and maintained to ensure the holistic development of learners.

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