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# JOURNAL OF RESEARCH IN ARCHITECTURE AND PLANNING

## Introduction

Focusing on research works relevant to the fields of architecture and planning, the Journal of Research in Architecture and Planning (JRAP) explores issues of relevance to both scholars and practitioners in the field of architecture, urban design, urban planning, built form heritage and conservation. JRAP was initiated in 2000 as a peer reviewed journal, initially published annually. Since 2011 its frequency has increased to biannual. In addition to the papers received through our regular submission process, the volumes also include papers selected from those presented at the annual International Conference of Urban and Regional Planning, hosted by the Department of Architecture and Planning at NEDUET. Contributions to the journal on general topics are accepted any time of the year, and incorporated in upcoming issues after going through a peer review process. A post conference review is also undertaken for the selection of conference papers, before their publication. JRAP holds the privilege of being the first peer reviewed journal in the discipline of architecture and planning, published from Pakistan. Contributions are received from all across the globe and on average one third to half the papers included in JRAP are from international scholars.

As of 2018, the category entitled 'Young Scholar's Contribution' has been included in the Journal. In this category, papers from young faculty and early career scholars are accepted and editorial assistance and peer review feedback is provided to improve the research papers. One such paper is published under the head 'Young Scholar's Contribution' within each issue of JRAP.

## Aims and Scope

The primary objective of JRAP is to provide an international forum for the dissemination of research knowledge, new developments and critique in architecture, urban design, urban planning and related disciplines for the enrichment and growth of the profession within the context. The journal focuses on papers with a broad range of topics within the related discipline, as well as other overlapping disciplines. JRAP publishes a wide range of research papers which deal with indepth theoretical reviews, design, research and development studies; investigations of experimental and theoretical nature. Articles are contributed by faculty members, research scholars, professionals and other experts. The editors welcome papers from interested academics and practicing architects. Papers published so far have been on topics as varied as Housing, Urban Design, Urban Planning, Built Environment, Educational Buildings, Domestic Architecture, Conservation and Preservation of Built Form. All previous issues are openly accessible and available online on the Journal's official webpage: [http://jrap.neduet.edu.pk/online\\_journal.html](http://jrap.neduet.edu.pk/online_journal.html).

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*Note: All the photographs included in this issue have been taken by the authors unless otherwise mentioned.*

## EDITORS' NOTE

The following volume of Journal of Research in Architecture and Planning is the 33rd volume and first issue of year 2023. It contains five papers contributed by international and local scholars. The papers cover themes related to landscaping, sustainability and education. The tilt of the volume is toward education and public parks / landscape which are envisioned through different perspectives by the paper contributors. Out of five papers, two papers in the volume are on public parks, two papers deal with primary and university level education and one paper analyzes the vertical housing as a possibility for sustainable urbanization. The first paper in the volume is international and four papers are local contributions. This volume also carries two book reviews.

The first paper addresses an important issue of landscaping and its impact on post primary school education. The premise of the paper is significant as it advocates landscaping in schools as one of the factors enhancing the school education. In today's digital driven age such papers direct us to reflect on the tangible built environment and its vitality in education and mental growth of young people.

The second paper is again centered on education and analyzes relevance of Pierre Bourdieus, theory of Cultural Capital on Architectural Education in Pakistan. The paper contextualizes a western theory by appropriating indicators of cultural capital and adapting them to the local context. The study is a quantitative one and shows applicability of the theory and its relevance for Pakistan.

The third paper in the volume is a study of potential of vertical housing as a solution for housing problem in this increasingly urbanized world. The paper focusses its lens on the city of Lahore. Housing is a very pressing global issue and the paper looks at vertical housing as a solution. It attempts to include user perception since vertical housing is not a favored choice in the context of Pakistan. The paper attempts a thorough profiling of residents' attitude and perceptions regarding vertical living.

The fourth paper analyzes satisfaction index of the need for public parks in Hyderabad. The study assesses the impact of public parks on inhabitants' social lives and advocates parks as a necessary urban public space stressing upon its need in Hyderabad and its environs.

The last paper in the volume looks at the evolution of Greater Iqbal park as a case study to examine dimensions of power, politics and space. If parks are taken as a public space within public domain, how political and power related contestations and conflicts spatially manifest them, is at the core of the study. States hegemony and its application on public space is also considered in the paper.

The volume also includes two book reviews, the first is review of the book "Hassan Fathy: Earth and Utopia" written by Salma Samer Damluji and Viola Bertini the second review is of "The Eyes of the Skin: Architecture and the Senses" written by Juhani Pallasmaa. Both the books are complimentary, since they provide an alternate thinking to modern architectural approach in design.

### Editorial Board

## TOWARDS ENHANCING POST-PRIMARY SCHOOL STUDENTS' LEARNING EXPERIENCE: THE CASE FOR NIGERIAN SCHOOL LANDSCAPE ENVIRONMENT

O.K, Akande\*, L.C, Obi-George\*\*, D.O, Adeoye\*\*\*, O.A, Obakin\*\*\*\*, E.M, Anikor\*\*\*\*\*

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### ABSTRACT

Landscape elements have significant importance in school designs due to the contributions they can make to students' learning experience and well-being. Learning in an aesthetically pleasing environment has been established to add value to the learners' experience as well as enhance their sense of well-being. In Nigeria, several public secondary schools mostly lack adequate landscape elements, which has caused a major strain on students' learning experiences and staff's productivity. This research explored the landscape environments of selected public secondary schools in Nigeria with a view to bringing to light the potential and value that landscape can add to the learning experience and wellbeing of the students. To investigate the precise roles of landscape components in enhancing student learning experiences, public secondary schools in Ilorin, Nigeria, were randomly selected for the study. Primary data was collected through questionnaires, case studies, and observation schedules. Findings reveal poor design quality in nature, with the result showing that the majority of public secondary schools were poorly landscaped. The study concludes that most students attending public schools in Nigeria are deprived of learning environments connected with nature's aesthetics and qualities. It recommends a holistic approach to public school management that goes beyond establishing schools and providing needed buildings but should give importance to good school landscaping to enhance not just the students' learning experience but also the learners' health and well-being, as well as nurture their ability to appreciate the beauty of nature right from school age.

**Keywords:** Landscape Elements, Landscape Environment, Landscape Management, Post-Primary School, Physical Environment, School Environment

### INTRODUCTION

The benefits of the landscape cannot be overlooked in terms of aiding the process of learning and providing a sense of comfort and well-being for the learners (Ali, et. al., 2019). Thus, appropriate landscape provision in any learning environment not only make the environment conducive but also aids the learning process that leaves a positive impact

on the students and the school environment. In addition, a well-designed landscape environment is also helpful for students' interaction, mingling and revision outside the classroom which add to their learning process. According to Treib and Dorothee (1997), landscape design is a form of art that combines land management, semi-artificial and natural component preparation, and the use of social and informational resources to preserve the environment and



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deliver important, healthful, and enjoyable functions. The management of the environment through area-based planning that takes into account the fundamental principles of design entails changing the state of the landscape. Emechebe (2020), posited that the quality of the environment, people's economic well-being, and their physical and psychological health are all influenced by landscaping, making it a significant aspect of their culture. Meanwhile, Adekunle and Basorun (2016), pointed out that landscape in a school setting, city, suburb, or rural setting should be unique and consider as the most economical instruments for improving and sustaining environmental excellence. Ibraheem (2018) studied the importance of landscape in school environment and found there are still many public secondary schools with little or no provision for proper landscape of their school environment. The author points out that landscape plays important roles in the environment and part of diversity in culture.

In a study by Emechebe, et. al. (2020) to determining critical hindrances in integrating landscape elements or green areas in built environments, six major factors were identified, such as inadequate funding or economic hindrance, poor maintenance and planning, ignorance of expert knowledge, lack of a policy or regulation directing implementation, ignorance of its advantages, and users' disregard for and lack of knowledge of the advantages of green areas. The study shows that 56% and 59% of the respondents strongly agreed that inadequate funding and lack of policy respectively remains the barriers towards integrating landscape in the built environment. According to Jianguo (2013), sustainable landscapes can satisfy existing requirements without harming the capacity of coming generations and made possible by maximising trade-offs where economic, social, and environmental goals conflict. Thus, integrating landscape necessitates a specific approach for attaining sustainable landscapes and inclusive rural change, which involves voluntary engagement among numerous stakeholders from various sectors and social groups. However, unsustainable resource management at a landscape size continues to be encouraged by ineffective economic and policy incentives. Meanwhile, in order to establish and entrench a sustainable landscape, the complete range of tools available to policymakers and government organisations must be used to help integrating the landscape strategically.

This study examined the gap in knowledge created through neglect of landscaped environment in aiding the learning process and how it improves students' learning abilities. The research is guided by the objectives to (i) Assess the

landscape elements present in the public school environment. (ii) Examine the level of management of landscape components in the schools to promote their existence and (iii) Examine how a landscaped environment helps the learning process and how it improves students' learning abilities.

## LITERATURE REVIEW

### Historical Evolution of Landscaping

Historically, landscaping is richly apportioned through design, spanning the entirety of human existence. Through a variety of architectural styles, the account of landscaping illustrates architectural variances. Shukor (2012) indicated that landscaping has just recently become prominent within human civilisation and is spreading rapidly across the globe.

Roger and Rob (2017) posited that gardens have been planned by people throughout history as a way of accumulating physiographic and eco-friendly qualities on the land for change of state and ecological upgrading. The traditions of antiquity, especially those of early Rome, are reflected in the roots of those gardens. Long ago, formal learning facilities existed in Egypt and other cities. This was a time when the relationship between created and natural types needed to be defined in order to support smart living, and this crystallised into the definition of landscaping as a specific sort of design.

Landscaping denotes a shift from what was primarily agriculture to a variety of trendy vocations, which has attracted people from all walks of life to the field (Weijie, et. al., 2022). Shen and Chou (2021), presented two types of landscaping: soft landscaping (i.e., flowers, grasses, plants, trees etc.) and hard landscaping. Moogk-Soulis (2002) reported that trees can be used to give shade against surfaces, function as a barrier to hot breezes, and produce cold air in their place. Hard landscaping refers to the design of a landscape using materials other than plants. Pathways, driveways, walls, patios, ponds, hedges, arches, mountains, fixtures, lighting, flower vases, etc. are examples. In addition to enhancing plants, creating relationships between buildings, identifying zones, and facilitating pedestrian and vehicular transit, landscapes are used to link development with its immediate surroundings. Kopeva, et. al., (2018), found that ponds with fish and waterfalls can be incorporated into artificial landscapes to offer therapeutic benefits to students. The ideal atmosphere for knowledge acumen is created by the calming effects of water components (Kelz, et. al., 2013).



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## The Evolution of Landscape on Learning Environment

Evolution of landscape on learning environment as put forward by Takahashi (1999), expressed that going outside is regarded as a natural and healthful component of the regular school day in an educational landscape perspective. Going outside has benefits beyond simply playing or using the playgrounds to release pent-up energy. In fact, academic studies have shown that specific landscape planting characteristics, such as colour contrast (Polat and Akay, 2015), naturalness (Gungor and Polat, 2018; Wang and Zhao, 2017), openness (Wang, *et. al.*, 2016; Wartmann, *et. al.*, 2021), and species richness (Southon, *et. al.*, 2018), play an important role in learning environment and landscape quality. When the entire educational setting is viewed holistically, learning activities are actively arranged outside of the school's boundaries (Parker, *et. al.*, 2022). Learning environments have also given significant consideration to gathering and teaching in outdoor spaces that complement and diversity inside spaces. Similar to how engaging with plants can enhance emotional states and cognitive function, there is a lot of data to support this claim (Van Den Bogerd, *et. al.*, 2018). It is therefore logical to assume that thoughtful planting in the environment will have positive effects on school children.

Students use of green spaces is influenced by the school's surroundings and is intended to fulfil that objective. The advantages of developing a connection with plants have also been thoroughly studied (Hanan, 2013, Stepan, *et. al.*, 2014, Li and Sullivan, 2016). Reducing stress, enhancing health and wellbeing, and raising awareness are a few of them. As a result, the integration of courtyards, gardens, groves, patios, pavilions, and walks within and around the building can improve the complementary relationship between a structure and site. Every school can create its own feeling of place thanks to the current educational environment. This identity may be founded on the natural essence of the place, or it may be sought in the community's cultural and architectural past. By finding these ways to incorporate a place or region, schools can take on a place of cultural and civic significance in the community's architectural fabric, helping to create a more memorable and potent sense of place.

## Landscape and Learning Environment

The role of landscape in schools are enormous as it aids in preserving the environment and also create conducive environment for learning. Landscapes surrounding the school's property either directly or indirectly has been observed by numerous researchers (Dyment and Bell, 2007; Loebach and Gilliland, 2014; Van Dijk-Wesselius, *et. al.*,

2018), to support the learning process. The relationship between landscape and the academic setting is enormous as it generates a unique role establishing discipline, provides a sense of direction, conducive environment which serves as an essential component of an academic setting (Burt, *et. al.*, 2017). Wells (2000) proposes that the temperature of the area around the schools may be lowered by the landscape. This is due to how important it is for plants to produce oxygen and then absorb carbon dioxide emitted into the atmosphere during the photosynthesis process. This helps to control the thermal effect of the surrounding environment, which makes learning very conducive.

In terms of aesthetic value, the landscape offers an alluring component (Rasidi, *et. al.*, 2013). A beautiful scenery can considerably lessen the emotional load on both students and teachers. It is reasonable to predict that public school students can benefit from well-designed planting in the school environment. This is supported by substantial evidence suggesting that interacting with plants contributes to improved emotional states and cognitive performance (Van Den Bogerd, *et. al.*, 2018). Similar to this, in-depth studies (Hanan, 2013; Stepan, *et. al.*, 2014; Li and Sullivan, 2016) have also investigated the advantages of connecting to plants, which lead to reduced stress and enhanced health and wellbeing. Meanwhile, as a plant's impact on human psychology is seen, interactions between students and plants can make the students feel better physiologically, think more favourably, experience less stress, and show a greater excitement for studying.

In addition, Dyment and Bell (2007), research on promoting physical activity through school greening shows numerous benefits of landscaping in a school setting. In the study, 105 questionnaires were distributed to teachers, parents, and administrators in 56 schools. The results show that school grounds should be planned to offer enough space, a variety of play opportunities, and opportunities for contact with the environment in order to encourage active learning. The integration of landscape elements has been of good benefit to the learning environment, which aids in the provision of a good and appealing environment for learning and has good security benefits. Research has also indicated that people's wellbeing depends on having a connection to the natural world. Dowdell, *et. al.*, (2011) suggested that as access to the environment continues to decrease, young children get more and more cut off from their natural surroundings. Thus, the importance of education and environments before schools in acclimating youngsters to their surroundings had been acknowledged.

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Other research has shown that children might use the outdoors as a location for play-learning while also being encouraged to engage in imaginative play and develop pro-behavioural ties in natural outdoor settings. According to Dowdell *et al.* (2011), early childhood learning centres should give children access to a natural outdoor setting and teachers who are supportive of their growing relationships with nature in order to employ outdoor play-learn settings effectively. A pleasantly designed environment may support learning directly or indirectly in a number of ways, including by offering areas for recreation, socialising, interacting with landscape elements, or even reviewing teachings outside of the classroom. One of the specific purposes of the study is to ascertain the positive impacts of soft and hard landscapes on the learning process and improve academic accomplishment in the learning environment.

In addition to imparting knowledge and developing specific abilities, school serves as an educational institution that actively shapes a child's perspectives, values, sense of self, and other perceptions (Brandisauskiene, *et al.*, 2021). The teaching and learning processes are shaped by the school environment, which can either support or hinder these activities. A supportive school setting fosters student success, efficient instruction, fewer behavioural and emotional issues, and a decreased likelihood of dropping out of school (Mahlomaholo, 2012). The behaviourism school of thought, also referred to as the behaviour learning theory, is a well-known theory that focuses on how students learn. The fundamental idea behind behaviourism is that all behaviours are learned through interactions with the natural environment. According to behaviourism, the learning environment is the most crucial component of the educational process (Ngandu, *et al.*, 2013).

### **Impacts of Landscape on Children Well-Being**

Theories as established by numerous researchers (Bagot, *et al.*, 2015; Pirchio *et al.*, 2021; Collado, *et al.*, 2013) along their empirical findings on restorative environments and the theoretical underpinnings of traditional pedagogical approaches exist in literature. The theories acknowledge the importance of first-hand exposure to natural elements and the resulting psychological and educational benefits. For instance, Fyfe-Johnson, *et al.* (2021) posited that children's health is improved by natural surroundings. The effects of outdoor environment features in early childhood education settings on children's health are little understood. Ole (2019) examined how children's health and outdoor

surroundings are related by looking at how well-being and physical exercise are experienced by children in various environments.

One of the main goals of outdoor environmental education interventions is to give children the chance to learn pertinent information about the ecological processes of natural habitats and to foster positive attitudes and behaviours towards environmental preservation. Children's participation in outdoor play has been linked to beneficial outcomes for their cognitive, physical, affective, and moral development as well as their level of independence and autonomy (Bento and Dias 2017). Meanwhile, researchers (Benfield, *et al.*, 2015; Hussein, 2017) have also discovered favourable effects of landscape on behaviour as well as improved social, economic, and aesthetic features of a location.

## **METHODOLOGY**

### **Study Area**

The study area, Ilorin, is located in Kwara State, Nigeria, roughly 8°30' north of the equator and 40°35' 4035' east of the Greenwich Meridian. It is about 100 km<sup>2</sup> in size. According to the 2006 census, the estimated population of Kwara State was 2.37 million people, with an estimated growth rate of 2.3% (National Population Commission, 2006). Ilorin has a tropical wet and dry climate with 1,200 mm of annual precipitation on average (Olaniran, 2002). In March, which is the hottest month, the temperature ranges from 25 to 30 degrees Celsius. In order to create an external environment that is both visually beautiful and useful, landscape design is a complicated process that takes many different elements into account. The local climate and topography of the area, client preferences, pricing, usage, materials, and orientation are just a few of the variables that may have an impact on how a landscape is designed and implemented. This is in accordance with Tyisha (2023) study which identified a few variables influencing the presence of landscape in the environment. According to the study, the kind of climate is a crucial consideration in landscape design since it affects the area in which buildings are constructed. For the design to be low-maintenance and sustainable, natural plants that can withstand drought should be used. The study also emphasised how important it is to consider elements like customer preferences, pricing, usage, and direction when designing a landscape in order to ensure that it is safe and comfortable. Figures 1 and 2 show a map of Nigeria with Kwara state, whose capital is Ilorin.

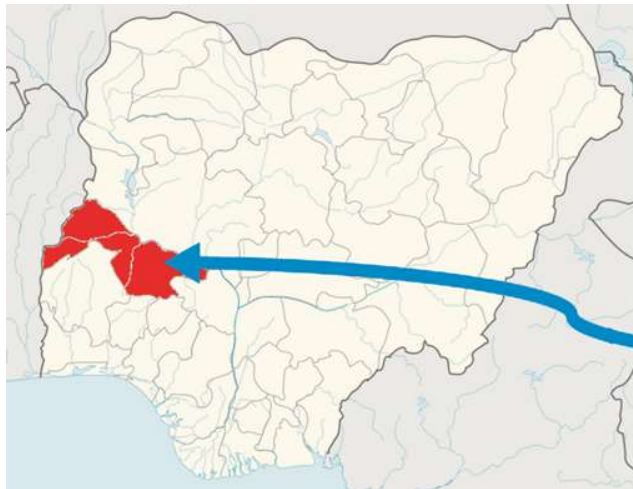


Figure-1: Map of Nigeria Showing Kwara State.

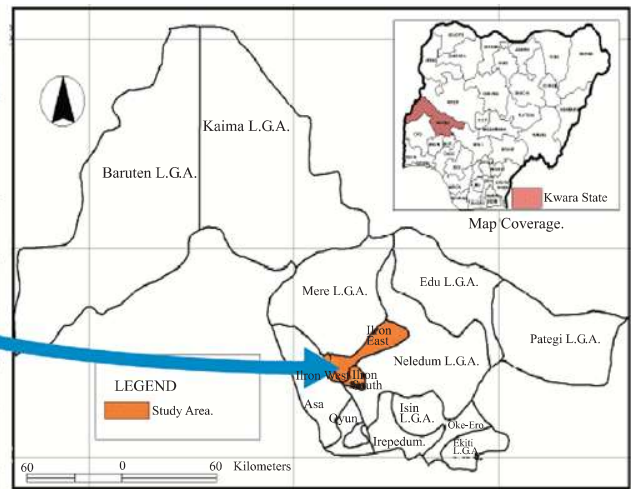


Figure-2: Map Showing Kwara Ilorin.

### POPULATION SAMPLING TECHNIQUE AND SAMPLE SIZE ESTIMATION

As of 2019, there were 63 public and 82 private registered secondary schools with estimated 42,195 students (Ibraheem *et al.*, 2022). Ilorin is divided into three local Government areas (LGA) which are Ilorin West (have 26 public secondary schools); Ilorin South (have 22 public secondary schools); and Ilorin East (have 15 public secondary schools). The current population of estimated number of students for enrolment is taken as 65180 students. Using a multistage sampling technique, the lists of public schools was arranged in alphabetical order and the number of schools to be picked from each LGA was allocated determined. Random sampling was used to select two participating schools from each LGA (i.e., Ilorin West, Ilorin South and Ilorin East). Based on Yamane (1967) for determining sample size, the sample size for this study was obtained using the following formula:

$$n = N / (1 + N (e)^2)$$

$$n = \frac{N}{1 + N(e)^2}$$

Where:

N = Population

n = Size of Sample

$$e = (0.05)^2$$

$$\frac{65180}{1 + 65180(0.05)^2}$$

n = Size of Sample 398

Table-1: Respondents Response Rate

| Location | No of Questionnaires Sent Out | Returned (No) | Response Rate (%) |
|----------|-------------------------------|---------------|-------------------|
| SSA      | 67                            | 15            | 23.4%             |
| SSB      | 66                            | 20            | 30.3%             |
| SSC      | 66                            | 14            | 21.2%             |
| SSD      | 67                            | 21            | 31.3%             |
| SSE      | 67                            | 21            | 31.3%             |
| SSF      | 67                            | 27            | 40.3%             |
| Total    | 400                           | 118           | 29.5%             |

**Table-2:** Gender of Respondents.

|       |        | Frequency | Percent | Cumulative Percent |
|-------|--------|-----------|---------|--------------------|
| Valid | Male   | 64        | 54.2    | 54.2               |
|       | Female | 54        | 45.8    | 100.0              |
|       | Total  | 118       | 100.0   |                    |

**Table-3:** Classes of Respondents.

|       |       | Frequency | Percent | Cumulative Percent |
|-------|-------|-----------|---------|--------------------|
| Valid | JSS1  | 11        | 9.3     | 9.3                |
|       | JSS2  | 20        | 16.9    | 26.3               |
|       | JSS3  | 14        | 11.9    | 38.1               |
|       | SSS1  | 21        | 17.8    | 55.9               |
|       | SSS2  | 21        | 17.8    | 73.7               |
|       | SSS3  | 31        | 26.3    | 100.0              |
|       | Total | 118       | 100.0   |                    |

**Table-4:** Survey on the Presence of the Landscape Element.

|       |       | Frequency | Percent | Cumulative Percent |
|-------|-------|-----------|---------|--------------------|
| Valid | Yes   | 85        | 72.2    | 72.0               |
|       | No    | 33        | 28.0    | 100.0              |
|       | Total | 118       | 100.0   |                    |

From the above calculation, using a 95% confidence level, three hundred and ninety eight (398) was needed as the sample size for the survey. Thus, total of 400 questionnaires was distributed among the six selected schools based on the population of students of each school (Table 1). A total of a hundred and eighteen (118) were returned, obtaining a response rate of 29.5%.

### DATA COLLECTION AND ANALYSIS

The study, which was quantitative research, implemented a descriptive research design using a survey as the main strategy for data collection. To offer a description of the occurrence and the experiences of the respondents, data for this study was gathered from primary and secondary sources. Primary data was collected via a field survey from the users of the six selected public schools. For the purpose of confidentiality the schools were coded from A to F i.e., Secondary School A (SSA) to Secondary School F (SSF) to know the availability of landscape elements in their school. The acquired data was evaluated using IBM SPSS Statistics 23 to understand the results, which will provide significant insights into the characteristics of the landscape planning and the school design. Finally, these findings can be used to drive future strategic public school landscape planning for sustainable design.

### RESULTS AND DISCUSSION

A reliability value of 0.704 was obtained from Cronbach's alpha. According to Taber (2018), the reliability of the questionnaire tested using Cronbach's alpha is one of the most important and pervasive statistics in research involving test construction and use" and is frequently used for multiple-item measures in academic work. This suggests that the reliability value is stronger the closer it gets near one. Table 2 illustrates the gender of the respondents. The male respondents constitute the largest gender with (54.2%), followed by females with (45.8%). The survey shows that they are more male than females among the respondents. This result contrast those of (Garcia-Gonzalez, *et al.*, 2019), who stated that integrating gender analysis into research is an important step in promoting gender equality and creating more inclusive research findings.

Table 3 shows the respondents' classes, and it can be seen that 26.3% of SSS 3 students filled out the questionnaire, followed by 17.8% of SS2 and SS1 children, 16.9% of JSS 2 students, 11.9% of JSS 3 students, and 9.3% of SSS 1 students. Given that the majority of respondents are seniors, it may be assumed that they will be knowledgeable of the advantages and disadvantages of landscape in a school setting.



**Table-5:** The Cut--Off Point.

| Mean Score | Interpretation    |
|------------|-------------------|
| 1-1.80     | Strongly Agree    |
| 1.8-2.60   | Agree             |
| 2.61-3.40  | Neutral           |
| 3.41-4.20  | Disagree          |
| 4.20-5.00  | Strongly Disagree |

**Table-6:** Survey on the Influence of Landscape Elements in Aiding the Learning Process and Learning Abilities

|  |                   | Frequency | Percentage | Standard Deviation | Mean | Ranking |
|--|-------------------|-----------|------------|--------------------|------|---------|
| Landscape influences the mood of student                             | Strongly Agree    | 43        | 36.4       | 1.310              | 2.20 | 5       |
|  | Agree             | 29        | 24.6       |                    |      |         |
|  | Neutral           | 31        | 26.3       |                    |      |         |
|  | Disagree          | 9         | 7.6        |                    |      |         |
|  | Strongly Disagree | 6         | 5.1        |                    |      |         |
| Landscape influences the attention span student                      | Strongly Agree    | 21        | 17.8       | 1.440              | 2.66 | 3       |
|  | Agree             | 40        | 33.9       |                    |      |         |
|  | Neutral           | 23        | 19.5       |                    |      |         |
|  | Disagree          | 26        | 22         |                    |      |         |
|  | Strongly Disagree | 8         | 6.8        |                    |      |         |
| Landscape promotes the health and aid students learning abilities    | Strongly Agree    | 53        | 44.9       | 2.505              | 2.36 | 4       |
|  | Agree             | 25        | 21.2       |                    |      |         |
|  | Neutral           | 10        | 8.5        |                    |      |         |
|  | Disagree          | 5         | 4.2        |                    |      |         |
|  | Strongly Disagree | 25        | 21.8       |                    |      |         |
| Landscape adds aesthetics health and aid students learning abilities | Strongly Agree    | 14        | 11.9       | 2.208              | 3.88 | 1       |
|  | Agree             | 14        | 11.9       |                    |      |         |
|  | Neutral           | 11        | 9.3        |                    |      |         |
|  | Disagree          | 12        | 10.2       |                    |      |         |
|  | Strongly Disagree | 67        | 56.8       |                    |      |         |
| Landscaping is an important part of schools                          | Strongly Agree    | 12        | 10.2       | 1.913              | 3.88 | 2       |
|  | Agree             | 12        | 10.2       |                    |      |         |
|  | Neutral           | 13        | 11         |                    |      |         |
|  | Disagree          | 24        | 20.3       |                    |      |         |
|  | Strongly Disagree | 57        | 43.3       |                    |      |         |

Table 4 shows that 72% of respondents have a landscape element in their school, whereas only 33% do not. The surveys show that the selected schools have limited landscape elements present in the school environment. In the survey, the respondent stated there are stones, unwanted grasses, and unplanned landscaping in the school environment. Elmaghraby and Kenawy (2016), in their study on the impact of outdoor landscape on students' social and environmental behaviour found that having a landscape in education facilities is important for reducing stress and anxiety that kids experience throughout the school day and boosting academic achievement. This indicates that appropriate steps should be taken to ensure the accessibility and upkeep of the landscape components in the school's setting.

The cut off point in the ranking used in Table 5 and 6 is finding the mean score and can be applied when there are categorical variables. To determine the cut-off point following formula was applied.

The upper limit for each cell is determined by  $y=a+bx$   
Where a is the constant = 1,

$$b = \frac{\text{maximum scale} - \text{minimum scale}}{\text{Number of scale}} = \frac{5-1}{5} = \frac{4}{5} = 0.8$$

cell is determined by  $y=a+bx$

Where a is the constant = 1,

And x= the scale: 1,2,3,4,5

The upper limit is obtained as follows:

$$Y= 1 + (0.8)1=1.8; Y=1+ (0.8) 2= 2.6; Y=1+ (0.8) 3=3.4; Y=1+ (0.8) 4=4.2; Y=1+ (0.8) 5=5.2$$

**Table-7:** Survey on the Level of Management of Landscape Elements in the School to Promote its Existence.

|   |            | Frequence | Percentage | Standard Deviation | Mean  | Ranking |
|---|------------|-----------|------------|--------------------|-------|---------|
| How would you rate the appearance of the landscape surrounding your school                    | Excellent  | 30        | 25.4       | 1.178              | 2.2.5 | 3       |
|   | Good       | 48        | 40.7       |                    |       |         |
|   | Average    | 21        | 17.8       |                    |       |         |
|   | Poor       | 15        | 12.7       |                    |       |         |
|   | Don't Know | 4         | 3.4        |                    |       |         |
| How would you rate the maintenance of the landscape elements surrounding your school building | Excellent  | 30        | 25.4       | 1.377              | 2.44  | 2       |
|   | Good       | 35        | 29.7       |                    |       |         |
|   | Average    | 31        | 26.3       |                    |       |         |
|   | Poor       | 15        | 12.7       |                    |       |         |
|   | Don't Know | 7         | 5.9        |                    |       |         |
| How would you rate the management of landscape of your school building                        | Excellent  | 33        | 28         | 1.497              | 2.45  | 1       |
|   | Good       | 32        | 27.1       |                    |       |         |
|   | Average    | 27        | 22.9       |                    |       |         |
|   | Poor       | 19        | 16.1       |                    |       |         |
|   | Don't Know | 7         | 5.9        |                    |       |         |

The survey questions used to ascertain how landscape features aided learning and student learning capacities are displayed in Table 6. Additionally, the respondents were given the choice between four options: highly agree, agree, agree, neutral, disagree, and strongly disagree. The fifth-ranked survey question, "Landscape influences students' mood," has a mean value of 2.20 and a standard deviation of 1.310; the second survey question, "Landscape influences students' attention span," has a mean value of 2.66 and a standard deviation of 1.440; which ranks 3rd, The third survey question, "Landscape promotes health and aids students' learning abilities," has a mean value of 2.505 and a standard deviation of 2.505 and ranks 4th. The fourth survey question, "Landscape adds aesthetics to the school environment," has a mean value of 3.88 and a standard deviation of 2.208, which ranks 1st; the fifth survey question, "Landscape is an important part of schools," has a mean value of 3.86 and standard deviation of 1.913. Dongying and William (2015) involved 94 high school students from five high schools in a randomised controlled experiment. Participants were assigned at random to classrooms with windows that opened into built-up areas, or windows that opened onto green areas. The results demonstrate that pupils' performance on focus tests and their capacity to bounce back from stressful conditions are both improved when there are views of greenery in the classroom. This implies that landscape elements have benefits and improve learning abilities, influence the mood of students, promote their health performance, and reduce stress. Landscape elements are therefore encouraged and considered to be part of the planning and design process to promote student welfare in an academic environment. The

survey results on the degree of management of landscape aspects in schools are shown in Table 7. The respondents were presented with four options: "excellent, "good, "average, "poor, and "don't know."

The data collected shows that the survey question, "How would you rate the management of the landscape surrounding your school building?" ranks 1st with a mean value of 2.45 and a standard deviation of 1.497, and the second survey question, "How would you rate the maintenance of the landscape elements surrounding your school building?" ranks 2nd with a mean value of 2.44 and a standard deviation of 1.377. According to Ali et al., (2019) with proper upkeep and access to landscaping elements, it contributes to a healthy environment and helps balance atmospheric conditions, among other things, in the areas of climate change or global warming, sustainability, to name a few.

Table 8 illustrates the survey taken on the level of landscape elements present in the school environment. The respondents were presented with four options (strongly agree, agree, neutral, disagree, and strongly disagree). These options were to ascertain the state and availability of landscaping elements present in the schools visited. The collected data shows that there are few or no landscape elements present in the schools visited. According to the collected data, for the survey question, "There are too many stones everywhere," respondents agree with a percentage of 23.7; for the second survey question, "There are unwanted grasses everywhere," the percentage is 25.4. The survey shows there is no adequate planning of landscaping elements in the respective schools visited.

**Table-8:** Survey on the Influence of Landscape Elements in Present School.

|  |                   | Frequency | Percentage | Standard Deviation | Mean | Ranking |
|--|-------------------|-----------|------------|--------------------|------|---------|
| There are presence of too many stones everywhere | Strongly Agree    | 23        | 19.5       | 1.118              | 2.58 | 3       |
|  | Agree             | 28        | 23.7       |                    |      |         |
|  | Neutral           | 47        | 39.8       |                    |      |         |
|  | Disagree          | 16        | 13.6       |                    |      |         |
|  | Strongly Disagree | 4         | 3.4        |                    |      |         |
| There are unwanted grasses everywhere            | Strongly Agree    | 12        | 10.2       | 1.114              | 2.88 | 1       |
|  | Agree             | 30        | 25.4       |                    |      |         |
|  | Neutral           | 43        | 36.4       |                    |      |         |
|  | Disagree          | 26        | 22         |                    |      |         |
|  | Strongly Disagree | 7         | 5.9        |                    |      |         |
| There are unwanted water bodies everywhere       | Strongly Agree    | 35        | 29.7       | 0.752              | 2.00 | 6       |
|  | Agree             | 55        | 46.6       |                    |      |         |
|  | Neutral           | 23        | 19.5       |                    |      |         |
|  | Disagree          | 3         | 2.5        |                    |      |         |
|  | Strongly Disagree | 2         | 1.7        |                    |      |         |
| Other Landscaping elements                       | Strongly Agree    | 33        | 28         | 1.600              | 2.45 | 5       |
|  | Agree             | 55        | 30.5       |                    |      |         |
|  | Neutral           | 23        | 17.8       |                    |      |         |
|  | Disagree          | 3         | 16.1       |                    |      |         |
|  | Strongly Disagree | 2         | 7.6        |                    |      |         |
| The landscaping is attractive                    | Strongly Agree    | 36        | 30.5       | 1.807              | 2.48 | 4       |
|  | Agree             | 31        | 26.3       |                    |      |         |
|  | Neutral           | 22        | 18.6       |                    |      |         |
|  | Disagree          | 16        | 13.6       |                    |      |         |
|  | Strongly Disagree | 13        | 11         |                    |      |         |
| The landscaping is well maintained               | Strongly Agree    | 30        | 25.4       | 2.067              | 2.75 | 2       |
|  | Agree             | 28        | 23.7       |                    |      |         |
|  | Neutral           | 22        | 18.6       |                    |      |         |
|  | Disagree          | 17        | 14.4       |                    |      |         |
|  | Strongly Disagree | 21        | 17.8       |                    |      |         |

### THE RESPONDENTS PREFERENCE OF LANDSCAPING MATERIALS

A survey was taken on the preference for landscaping elements in the school environment. This is to ascertain the most desired landscaping materials needed by the respondents that can promote their learning abilities. Figures (3–5) show different landscaping materials and the respondent’s respective choices of the listed materials. Figure 3 shows different landscape materials for plants. The respondents were presented five (5) landscape elements of plants, namely shrubs, climbers, trees, creepers, and covered walkways. The research showed that 60 percent of respondents want more trees to be planted as a landscape element, followed by climbers (17), shrubs, creepers, and covered paths.

According to Seth (2003) and Zhao *et al.* (2018), a comfortable educational environment needs trees and shrubs because: (i) Users require environments with comfortable temperatures and microclimates. (ii) In hot climates, cool shade is required; pollutants that pose serious issues should be removed. Dense populations, as in the case of institutions, need vegetation for gaseous exchange. This implies that the presence of trees is very important as they aid in creating an educational environment conducive to learning.

Different landscape water bodies were presented to the respondents as shown in figure 4. The water bodies presented to the respondents are fountain, pools, ponds, sports and artificial waterfalls. The majority of respondents preferred building fountains as landscape features for the schools'

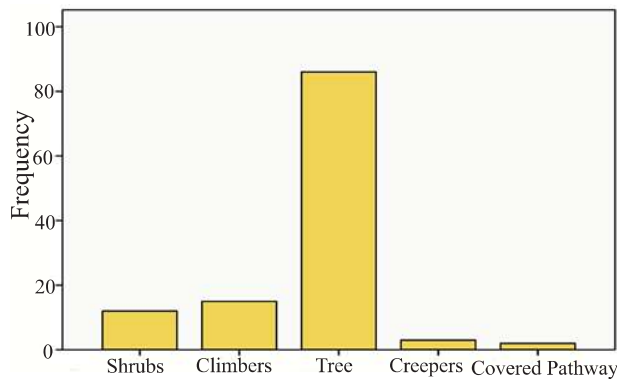


Figure-3: Landscape Element of Plants

water features. According to the data, fountain has the frequency of 57 followed by Ponds with the frequency of 25, pools with the frequency of 15, artificial waterfalls with the frequency of 10 and sports with the frequency of 5. Although the amounts vary greatly, Levy & Mensah (2020) claimed that water is necessary for all gardens and landscapes, even in the desert. The qualities of water as a design feature include coolness, dampness, sparkle, lightness, depth, and tranquillity, the potential for aquatic flora and animals, and recreation. According to the study, water also contributes in lowering the scorching temperature, and minimises noise pollution.

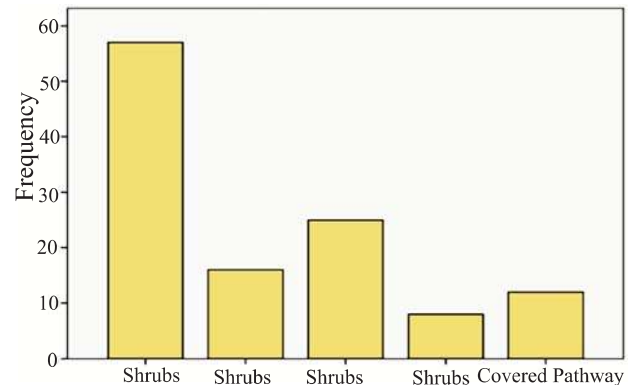


Figure-4: Landscape Element of Water Bodies

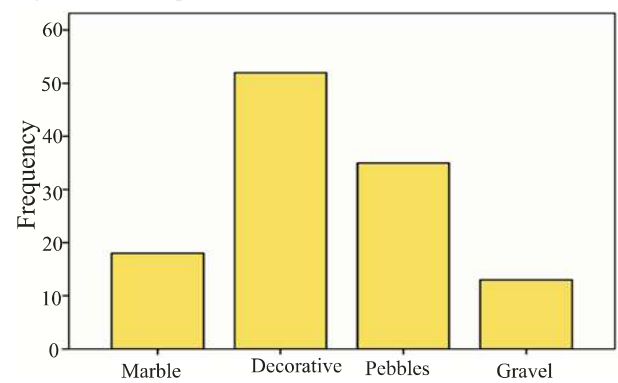


Figure-5: Landscape Element of Stones

Figure 5 shows that the respondents data of landscape elements of stones. According to the research, respondents concur that decorative stones should be used as a landscape element with the frequency of 50 followed by pebbles with the frequency of 35, marble with the frequency of 19 and Gravel with the frequency 13. According to Elmaghraby and Kenawy (2016) the interior and outdoor environments must be well-designed to create a good learning environment that will improve kids' academic performance, social behaviour, self-confidence, environment health, and sense of belonging.

### FIELD RECONNAISSANCE SURVEYS OF LANDSCAPE ELEMENTS IN THE SCHOOL ENVIRONMENT

Surveys were conducted in the designated schools of the study area and pictures were taken to show the Level of the presence of landscaping elements. The survey (Figures 1-6) shows that most of the school environment possesses no landscaping features and only this necessitates taking necessary precautions to avoid its present condition and also to promote adequate comfort to the users of the environment. Figures 1 and 2 illustrate the spaces of the laboratory linking

the hall and entrance to the administrative block. In line with the views, it is observed that there are no existing landscape elements in that area. Emechebe (2019), in the study where 370 structured questionnaires were randomly distributed to residents of Abuja Municipal Area Council (AMAC) to determine the significance of green spaces and landscape components, retrieved 322 out of the total. The study accessed four (4) factors for the need of integrating landscape components in built environments, namely adequate comfort, a good climate, good air quality, and good health. This implies that appropriate measures must be taken to encourage and promote the existence and maintenance of landscape components in school environments, which have a positive impact on students' learning capacities figures 3 and 4 demonstrates the entrance and classroom of the school environment. Based on the view there are no landscape elements present. Berto (2005) stated that outdoor spaces with vegetation, water features, landmarks, and structures contribute to the creation of a better and more sustainable environment. This encourages people to be there and to provide the highest possible quality of life. This implies that an identification of inadequate landscape and its effects in school environment is a prerequisite to the improvement of its integration in the school environment.





**Figure-6:** School Hall Environment



**Figure-7:** Administrative Building Environment



**Figure-8:** Entrance into the School Environment.



**Figure-9:** Class Room Environment

Figures 6 and 7 depict the administration and school hall environments, respectively. The panorama obviously reveals poor factors that are part of the environment. Blair (2009) proposed in the study a review of the American literature on children's landscaping, taking into account potential effects, school gardening outcomes, teacher appraisals of gardens as learning resources, and methodological difficulties. The study indicated that school gardens enhanced students' science proficiency and that gardening regularly benefited students' environmental views or social actions.

Based on the literature analysis and study findings, inadequate funding and a lack of policy continue to be the main impediments to the promotion of landscape existence in the school setting. In light of these constraints, Louman et al. (2022) proposed certain criteria that support or inhibit finance and projects across sectors for inclusive landscapes in ways that cumulatively lead to more sustainable landscapes in the tropics. Landscape governance, local stakeholder financial literacy, access to finance technology and services, inclusive finance facilities, and related mechanisms for integrated (i.e., multi-project, multi-sector, spatially coordinated) landscape finance are key components in the design of inclusive landscape finance.

The study stated that the main difficulties faced by the recipients were their lack of financial literacy, their lack of technical expertise in converting conventional land-use practices into sustainable ones, their lack of collateral (often related to their insecure land tenure), and their inability to access financial institutions, their lack of capital or income, and their poor organisational skills. The study recommended that landscape governance necessitates institutions that involve all necessary parties from the public, private, and civil societies in order to bring about systemic change. Clarifying norms and regulations and making them easier to apply are both benefits of inclusive landscape governance.

## RECOMMENDATIONS

The following suggestions are given in light of the study's results;

- The administration of the school should focus on and pay particular consideration to the landscape elements that are present within the school compound for the benefit of learners and for their continued survival.
- The authorities should renovate its secondary schools and incorporate ecologically friendly landscape designs for the benefit of students.

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- This study suggests that the state's decision-makers in charge of setting educational policy should make it a requirement that all secondary schools, whether they are public or private, have a viewable landscape.
  - Trees and plants of various types should be added to parking lots, strategic locations, and open places to control global warming and act as wind breakers.
  - The government should make provision for financial adequacy in the budget that will help finance the landscaping in the school environment.
  - The architects must carefully consider the planning of the outside environment as well as the school structures or the interior of the classroom, resulting in an acceptable setting that supports student comfort and dedication to studying.

## CONCLUSION

There is a strong connection between academic accomplishments in schools and the way the landscape functions to support the learning process generally. The effectiveness of the functions performed by the school's landscapes would be at its highest if they were properly managed, particularly the hard and soft aspects. The same holds true for the respective school's academic performance. Also, teachers may use the school's garden to teach classes in the arts, science, and geography. When artificial landscape features like fish ponds or fountains are present, teachers might use them to instruct children about the habitats found there. There is a strong correlation between how important a school's atmosphere is for fostering and encouraging respect for the environment and how successful that environment is.

This study has shown the benefits of integrating landscape into schools and the link between students' performance both academically and socially and the physical environment

outside of school. The result of the study shows a lack of landscaping elements in the selected schools, and the respondents expressed their concern and the relevance of integrating the landscaping elements in the school environment in the hot, humid climate of Ilorin to enable a sustainable environment conducive to learning. It is obvious that this shows that the environment has a big impact on learning and creates an appreciation for and enabling environment for students.

Landscapes may generally improve the attractiveness, usability, and sustainability of cities, schools, and the overall built environment, as previously stated in the literature and findings, but they also confront many problems. Adequate study must be done on the site context, including climate, terrain, hydrology, soil, vegetation, animals, history, culture, and regulations, in order to address these concerns with landscape implementation. Analysis of the user's needs, preferences, and behaviours is also necessary. These include things like accessibility, safety, comfort, and enjoyment. The material can be gathered and organised using a variety of techniques, including site visits, surveys, interviews, maps, pictures, and data sources. Additionally, the current landscape strategy has to be updated, with a focus on lessening soil degradation and making greater use of new remote sensing technology to comprehend Earth surface processes.

Simulations of potential water flow paths and sediment delivery, along with identification of potential solutions (i.e., suitable drainage systems), should be part of guidelines about the most suitable (regarding erosion mitigation) agronomic practise to cultivate agricultural terrace systems. Keeping up with the demands of the present output while the climate is changing is a constant struggle. A comprehensive viewpoint, such as the one put forward, can be quite helpful in overcoming these difficulties. To establish a pleasant environment for the users, the government should provide adequate funding to encourage the inclusion of landscape elements in the learning environment.

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