

## Users Perception of Landscape Elements as Security Measures in Secondary School, Minna, Nigeria

ANIKOH Rosemary Ohunene<sup>1</sup> & AYUBA Philip<sup>2</sup>

### Abstract

---

Nigeria like every other country of the world is faced with varying category of security challenges ranging from the activities of terrorist groups and kidnappers to other criminal activities. As open systems, the schools have been deeply affected by these security challenges. School environments are no longer well secured and safe for effective teaching and learning to take place. A correlation exists between security and landscape that predates to ancient times, where landscape was used for both attacking and defensive strategies. However, the aim of this paper is to examine the perception of secondary school users with the type of security system in their schools so as to determine opportunities to improve security in schools using landscape element. Post-occupancy evaluation as a research method was employed to carry out this study. Data for the study was obtained using an observation schedule and questionnaire forms and samples were randomly selected from Government secondary schools in Minna. The data was analysed using SPSS and Microsoft Excel packages. The findings revealed that users are not satisfied with the present security measures in their schools. The paper therefore, recommends that landscape elements be applied as security measures in secondary schools.

---

**Keywords:** Environment, Landscape elements, Secondary schools, Security, Threats

### 1.0 Introduction

In the world today, security is no longer a nobody's concern rather it has become everybody's concern as cases of insecurity has been on a steady rise. Educational institutions such as schools are faced with a major challenge of insecurity this has made the core business of schools which is effective teaching and learning not to be easily achieved. Educators and students are not able to effectively achieve their purpose of going to school as the increased cases of insecurity in schools creates a tendency for more cases of insecurity to occur.

Security has been defined by many researchers. Deyer and Osher (2000) defined security as the degree of protection against damage, danger, loss and crime while, Orpinas, Home and Staniszewsk (2003) are of the opinion that security is a form of precaution where a separation is created between the asset and the threat. However, security has a sole purpose of creating a safe environment, taking precautions to safeguard an environment from intending danger and injury.

Recent studies have shown a number of ways in which cases of insecurity has been tackled ranging from employing security personnel's to providing more security gadgets to help detect and sense criminal activities (Coaffee, 2016). In spite of these, cases of insecurity has continued to increase. Landscape design on the other hand is the art and science of organizing and enriching outdoor spaces through the placement of plants and structures in agreeable and useful relationship with the natural environment (VanDerZanden and Rodie 2008).

Landscape design serves a lot of purposes which includes aesthetics, enhancing functionality of spaces, improving temperature, influencing air quality of the environment and also combating security threats.

---

<sup>1</sup> 1.Department of Architecture Federal University of Technology, Minna, Niger state Nigeria. Corresponding Author: E-mail: [rosemary.anikoh@st.futminna.edu.ng](mailto:rosemary.anikoh@st.futminna.edu.ng)

<sup>2</sup> Department of Architecture Federal University of Technology, Minna, Niger state Nigeria

This paper, therefore, seeks to evaluate landscape design elements as security measures in secondary schools in Minna.

### **1.1 Insecurity in Nigerian Schools**

Nigeria like many other countries has witnessed an increased level of insecurity in recent times, especially in public buildings such as educational institution, religious buildings, places of worship (Ushe, 2012). This level of insecurity is evident with the amount of allocation given by the federal government to matters of security in the national budget. Terrorism, kidnapping, rape and bombing are major cases of insecurity faced in secondary schools in most part of Nigeria.

According to Sampson & Onuoha (2011), terrorism is the premeditated use or threat use of violence by an individual or group to cause fear, destruction or death especially against unarmed targets, property or infrastructure in a state, with the intention to compel those in authority to respond to the demands and expectations of the individual or group behind such violent acts.

There has been an increase in the cases of insecurity in schools in Nigeria which has given concern for the study of improving security situations in schools. In Chibok, a town close to the boundary between Bornu and Adamawa states of Nigeria. Ndahi (2014) reported how gunmen invaded and abducted over 200 senior secondary school girls from the school compound. Such security threats need to be acknowledged and prevented.

Another analysis of insecurity amongst student was conducted by Akintokumbo (2011) in Abuja, the capital city of Nigeria where he reported that there had been four major terrorist attacks between 2010 and 2011. However, in Yobe State, Ndahi (2014) reported, "several students and staff of Federal Government College in Buni-Yadi of Yobe State were feared death while others were abducted by gunmen suspected to be members of the Boko-Haram sect". The gunmen set ablaze numerous structures in the school and dead bodies of some students were burnt beyond recognition. This clearly shows that there exist a great challenge of insecurity facing secondary schools in Nigeria.

In order to reduce the incidence of insecurity in the country, the Federal government embarked on criminalization of terrorism by passing the Anti-Terrorism Act in 2011, installing computer based closed circuit television (CCTV) cameras in some part of the country, enhancement of surveillance as well as investigating of criminal related offences, heightening of security measures across the country with the main aim of disrupting potential attacks, providing security facilities to security agencies and broadcasting security tips on mass media platforms (Ewetan, O. O. & Urhie E., 2014). Despite these efforts, insecurity in Nigeria is still high and on the increase.

### **1.2 Physical Security Control Measures**

According to Adedayo, Ailoyafen and Adebayo (2017), in reducing the risks of direct contact and physical attacks against any facility, the physical security measures are mostly useful, also integrating potential measures in design minimizes the impact of attacks on the building. The National capital planning commission identified passive security measures as permanent protective measures provided by both the site and structure that involves the use of architecture and architectural engineering to achieve improved security by eliminating potential security threats in buildings. Therefore, passive security measures can be said to be a part of physical security control measures and it is necessary to include passive security measures in the designs of buildings to eliminate threats.

Passive security measures such as bollards, raised concrete planters, standoff distances, fences and trees are static elements integrated in the design of buildings right from the inception stage. These aforementioned physical barriers create a psychological restriction for persons thinking of invading a place of unauthorized entry.

According to Campbell (2007), Natural surveillance is a form of physical security strategy. This strategy ensures the clear visibility of a building and the entire site to security personnel and authorized users. This can be achieved by reducing the height of tall vegetation or by completely avoiding vegetation that may obstruct visibility. Also, Kovacich & Halibozek (2003) stated that lighting system enhance physical security as dark corners are illuminated. However, it is necessary to install these lighting systems in a way that they cannot be tampered with and as well provide backup.

### **1.3 Landscape as Security Measures**

According to Coaffee (2016), the concept of community safety through Crime Prevention through Environmental Design (CPTED) is based on many factors, as such physical protection of the environment is achieved

through well designed security features, suitable access and movements, by defining spaces, entrance, observation spaces, territoriality, human activity that is suitable to space and other factors that affect community safety. Felix and Elhefnawi (2018) analysed that by using this theory in Belfast between 1974 and 1984, the sixty-four records of bombing incident in 1974 was reduced drastically to three bombing incidents in 1984. Some measures carried out includes decreasing manned security gates, increasing off-street parking places, increasing the numbers of fully pedestrianised streets and increasing private sector investment.

Mohareb & Felix (2017) highlighted the elements of landscape design used for security to include vegetation, surface materials, lighting, fences, street furniture and other elements. Numerous researches have been carried out on the effect of visible and invisible security solutions for spaces security (Ibrahim & Azubuike, 2014). Coaffee, O'Hare, & Hawkesworth, (2009) classified security features into three main types: first Overt features which serves military purposes; second, stealthy features that are visible but not perceptible by the public as a security feature; and third, invisible features. The use of more invisible security elements creates more friendly spaces for users and also maintain the images of urban character. Therefore, security solutions are not very efficient solutions for crime prevention however the use of landscape elements as security measures are far more efficient.

Other types of landscape elements used to protect spaces and building surroundings from attacks are bollards, sculptural elements, settings, walls, fences, topography, collapsible surfaces, fountains or water features, plantation elements.

In order to mitigate threats, it is necessary to introduce basic preventive measures such as trees, massive objects (large sculptural objects), massive boulders to prevent and control vehicular movements as well as pedestrian movements. Beyond this, the topography (slope) of the site can be used as a security measure. A rugged topography makes movement difficult, giving room to an effective means for the control of movements. Also, roads can be designed as chicane that is a snake-like pattern with intermediary bumps so as to reduce the speed limit of vehicles.

## **2.0 Research Methodology**

The research method employed to carry out this study was the use of Post-Occupancy Evaluation method. Data for the study was obtained using an observation schedule and questionnaire purposefully structured to provide sufficient and relevant information for the analysis of the study. Ten Government secondary schools were randomly selected within Minna and a total of 500 questionnaire forms were distributed fifty per school. The questionnaire was collated with the data entered into the SPSS software where descriptive tools for analysis were used to analyse the data. The output from SPSS was then transferred to Microsoft excel where the tables and chart were developed.

## **3.0 Results and Discussion**

### **3.1 Security of School Building using Likert Scale Measurement**

A Likert scale of 5 was used in determining the level of perception of the security of the school environment by the school users, ranging from "Very Dissatisfied" to "Very Satisfied" as shown: Very Dissatisfied 1, Dissatisfied 2, Undecided 3, Satisfied 4, Very Satisfied 5.

In Table 1.0, the spread of the respondents regarding issues related to the variables on the Security challenges faced by users of the schools were quite divergent as was observed by the figures provided. It could be deduced that security challenges could be easily interpreted by the respondents who always worry about such security challenge. This was further expatiated in Table 3.0 using the mean of the values allotted to the options selected by the respondents on the Likert Scale measurements.

**Table 1.0: Number of respondents per opinion on Satisfaction with Landscape as Security Measures in School**

Variables	Very Dissatisfied	Dissatisfied	Undecided	Satisfied	Very Satisfied	TOTAL
Rating of Kerb stones as vehicle barriers	19	32	69	146	101	367
Rating of Flowers and hedges as pedestrian guide	13	19	32	164	139	367
Rating of location of signage and wayfinding facilities	44	38	70	107	108	367
Rating of type of fence in the school	19	19	38	95	196	367
Rating of defined pedestrian circulation paths.	13	25	13	146	170	367
Rating of location of car park	32	25	32	95	183	367
Rating of number of access into the school premises.	26	107	82	107	45	367
Rating of the location of bollards around school.	19	32	25	190	101	367
Rating of the topography of the school site	25	38	108	171	25	367
Rating of the location of security light in schools	19	51	95	164	38	367
Rating of setback within the school	6	63	82	184	32	367

Source: Authors, 2019

**Table 2.0: Weighted Score of respondents on Satisfaction with Landscape Elements as School Building Security**

Variables	Very Dissatisfied X1	Dissatisfied X2	Undecided X3	Satisfied X4	Very Satisfied X5	TOTAL
Rating of Kerb stones as vehicle barriers	19	64	207	584	505	1379
Rating of Flowers and hedges as pedestrian guide	13	38	96	656	695	1498
Rating of location of signage and wayfinding facilities	44	76	210	428	540	1298
Rating of type of fence in the school	19	38	114	380	980	1531
Rating of defined pedestrian circulation paths.	13	50	39	730	850	1682
Rating of location of car park	32	50	96	380	915	1473
Rating of number of access into the school premises.	26	214	246	428	225	1139
Rating of the location of bollards around school.	19	64	75	760	505	1423
Rating of the topography of the school site	25	76	324	684	125	1234
Rating of the location of security light in schools	19	102	285	656	190	1252
Rating of setback within the school	6	126	246	736	160	1274

Source: Authors, 2019

Based on the calculation of the Likert Scale the result obtained was used to determine the perception of the users on the selected variables. The range of value for each option of level of satisfaction as follows: 1.0 -1.49 Very Dissatisfied, 1.5 -2.49 Dissatisfied, 2.5 -3. 49 Undecided, 3.5 – 4.45 Satisfied, > 4.5 Very Satisfied.

**Table 3.0: Respondents Opinion on Satisfaction with Landscape Elements as School Building Security**

Variables	TOTAL	MEAN	INTEPRETATION
Rating of Kerb stones as vehicle barriers	1379	3.76	Satisfied
Rating of Flowers and hedges as pedestrian guide	1498	4.08	Satisfied
Rating of location of signage and wayfinding facilities	1298	3.54	Satisfied
Rating of type of fence in the school	1531	4.17	Satisfied
Rating of defined pedestrian circulation paths.	1682	4.58	Very Satisfied
Rating of location of car park	1473	4.01	Satisfied
Rating of number of access into the school premises.	1139	3.10	Undecided
Rating of the location of bollards around school.	1423	3.88	Satisfied
Rating of the topography of the school site	1234	3.36	Undecided
Rating of the location of security light in schools	1252	3.41	Undecided
Rating of setback within the school	1274	3.47	Undecided

Source: Authors, 2019

In Table 3.0, it was observed that the respondents were barely satisfied with the use of kerb stone as vehicle barrier, flowers and hedges as pedestrian guide, location of signage and way finding facilities, type of fence in the school. However, the respondents were very satisfied well-defined pedestrian path for circulation. The number of access into the school premises, topography of the school site, location of security light in school and setback within the school as element of landscape for security were all undecided by the respondents, perhaps because this aspect of landscape for security is not clearly understood by the respondent. The location of bollards around the school helped create a sense of security hence the respondents were understandably satisfied with bollards around the school as security measures.

#### 4.0 Conclusion

The study reveals that users to a certain extent are satisfied with the use of landscape element as security measures except for the few parameters that were uncertain by the respondents

#### Recommendation

The use of landscape element as security measures is recommended to schools as users of schools feel satisfied. Therefore, Architects, Stakeholders, Developers and Professionals involved in the development of secondary schools should incorporate landscape elements used as security features to create a safe learning environment for the students.

#### References

- Adedayo O. F., Ailoyafen D. and Adebayo O. A. (2017). Landscaping for Passive Security and Adaptation to Climate in Church Environment, Niger State, Nigeria. *Nigerian Journal of Technology*, 36(1), 7-17.
- Akintokumbo, A. (2011). The problems and challenges of insecurity in Nigeria. Retrieved from [community.vanguardngr.com/profiles/blog/the-problems-andchallenges-of-insecurity-in-Nigeria](http://community.vanguardngr.com/profiles/blog/the-problems-andchallenges-of-insecurity-in-Nigeria)
- Campbell, J. (2007). *Anticipating and managing crime, crisis and violence in our schools: A practical guide*. Youngstown, New York: Cambria Press.
- Coaffee, J. (2016). Terrorism, risk and the global city: Towards urban resilience. *Routledge*.
- Coaffee, J., O'Hare, P., & Hawkesworth, M. (2009). The visibility of security: The aesthetics of planning urban defences against terrorism. *Security Dialogue*, 40(4-5), 489-511.
- Deyer, K. P. and Osher, D. (2000). *Safeguarding our children: An action guide*. Washington DC: Sciedu Press.
- Ewetan, O. O. & Urhie E. (2014). Insecurity and Socio-Economic Development in Nigeria. *Journal of Sustainable Development Studies*, 5(1), 40-63.
- Felix, M. and Elhefnawi, M. (2018). Landscape design elements as a defensive tool for building security. *International Journal on: Proceedings of Science and Technology*, 1-11.

- Ibrahim, A. M. & Azubuike, A. S. (2014). A Review on the Security Challenges in Northern Nigeria and its Implications for Business Survival and Sustainable Development. *Journal of Management and Corporate Governance*, 6(2), 46 – 54.
- Kovacich, G. L. & Halibozek, E. P. (2003). *The Manager's Handbook for Corporate Security: Establishing and Managing a Successful Assets Protection Program*. New York: Butterworth-Heinemann.
- Mohareb, N., & Felix, M. (2017). Affordable and Common Modes of Transportation in Developing Cities and Their Effect on the Sustainability of Streets. *Procedia Environmental Sciences*, 319-329.
- Ndahi, M. (2014). Scores of students feared death as Boko Haram attack girls college in Yobe. Retrieved from [www.vanguardnigr.com/2014/02/scores of students feared dead as boko haram attack fggc yobe](http://www.vanguardnigr.com/2014/02/scores-of-students-feared-dead-as-boko-haram-attack-fggc-yobe)
- Orpinas, P., Home. A. N. and Staniszewsk, D. (2003). School bullying: Changing the problems by changing the school. *32(3)*, 431-444.
- Sampson, I. T. & Onuoha, F. C. (2011). Forcing the Horse to Drink or Making it Realise its Thirst? Understanding the Enactment of Anti-Terrorism Legislation (ATL) in Nigeria. *Perspectives on Terrorism*, 5(3-4).
- Ushe, M. U. (2012). Religious conflicts and education in Nigeria: Implications for national security. *International Journal of Educational Research and Development*, 1(2), 11-22.
- VanDerZanden, A. M. and Rodie, S. N. (2008). *Landscape design, Theory and application*. Canada: Thomson Delmar Learning.