
IMPACT OF NOISE POLLUTION ON THE ACADEMIC PERFORMANCE OF STUDENTS IN THE UNIVERSITY OF ILORIN'S LEARNING ENVIRONMENT, NIGERIA

Agaja, Toluwalope Mubo and Akande, Gbotemi Peter

Department of Geography and Environmental Management, Faculty of Social Sciences,
University of Ilorin, P.M.B. 1515, Ilorin, Kwara State Nigeria.

*Corresponding email: specialgel@yahoo.com , agaja.tm@unilorin.edu.ng

+2347032329906, +2348055916475

ORCID iD¹: <https://orcid.org/0000-0003-4405-7108>

<https://doi.org/10/33003/jees.2024.0102/05>

ABSTRACT

Chronic noise exposure in communities near air, road, and/or rail traffic, as a stressor and distraction, can lead to adverse health outcomes and reduced academic performance among adults and children at schools and homes. This study examined the effect of noise pollution on students' academic performance within the University of Ilorin's learning environment, highlighting the environmental impacts of elevated noise levels. Specifically, the study objectives include identifying the sources and intensity of noise within the university environment, its effect on student performance relative to WHO standards, and its impact on student health. Data were collected through a survey administered to 396 students, including undergraduates, postgraduates, and sandwich students. Noise levels were measured using a noise meter across various university locations. Descriptive and inferential statistics, as well as spatial analysis techniques, were applied to the collected data. The results showed that noise levels across the university environment ranged from 77.4 to 95.1 dB, significantly exceeding the WHO recommended threshold of 35dB for schools. Spatial variations in noise pollution were observed, with higher levels in the faculties of Arts, Education, Sciences, Physical Sciences, and Veterinary Sciences. The dominant sources of noise pollution were student social activities, including campaigns and elections, along with generator and vehicular noise. The environmental impact of these elevated noise levels is profound, doubling WHO's minimum noise standards for educational settings. This study concludes that the high noise levels within the university environment are detrimental to both the academic and environmental quality of the ecosystem. It highlights the need for better land use planning and infrastructure development to create sufficient buffers between noise-generating activities and academic spaces, thereby mitigating both environmental and educational impacts.

Keywords: Noise pollution, Academic performance, Environmental impact, Students

INTRODUCTION

Noise, defined as unwanted sound, disrupts not only individual activities but also the surrounding environment and ecosystems. Buchari and Nazarudin (2017) described noise as

having adverse physical effects, such as hearing loss, and psychological impacts, like frustration and annoyance. In academic ecosystems, noise pollution can arise from various sources, including external traffic, internal classroom disturbances, and environmental factors (Woolner & Hall, 2010). According to the WHO (2011), the permissible noise level in school environments should not exceed 35 dB. Still, in many less developed countries (LDCs), such as Nigeria, students lack access to serene learning environments. Managing noise pollution within these ecosystems poses a significant public health challenge.

The relationship between noise pollution and the environment is closely interconnected, as noise pollution can significantly impact various environmental factors, including wildlife, human health, and natural ecosystems. Excessive noise can not only disrupt academic performance but also negatively affect local ecosystems by altering species' behaviors, communication, and migration patterns. University ecosystems, like that of the University of Ilorin, are particularly vulnerable, as these institutions often include green spaces that serve as microhabitats for wildlife. Noise from transportation, student activities, and generators can disturb these natural habitats, leading to ecological imbalances and reduced biodiversity while also impacting student health and learning outcomes.

In more developed countries like the United States, noise control is reinforced through federal standards for highway and aircraft noise, while local governments regulate building codes to minimize environmental disturbances. The Netherlands, for instance, restricts construction in areas where 24-hour average noise levels exceed 50 dB, and Great Britain enforces strict penalties for excessive nighttime noise (Omubo-Pepple et al., 2010). However, Nigeria lacks comprehensive regulations or awareness concerning noise pollution, with many individuals perceiving it as a normal part of life. Studies have highlighted the absence of enforceable noise standards and limited public awareness campaigns addressing the adverse effects of noise pollution in Nigeria. For instance, Babisch et al. (2020) emphasize that regulatory frameworks for managing environmental noise are either weak or poorly implemented in many low- and middle-income countries, including Nigeria. Similarly, Ajao and Oyedepo (2011) note that in Nigeria, noise pollution is often accepted as a routine aspect of urban living, reflecting a lack of awareness of its health impacts.

Both the auditory and non-auditory effects of noise are significant (WHO, 2004). Chronic exposure to noise in communities near busy roads, railways, or airports can lead to a range of adverse health outcomes, including hearing loss, stress, hypertension, and cognitive delays (Shendell et al., 2004). Moreover, teachers in noisy environments often have to raise their voices to be heard, increasing the risk of voice disorders over time. Persistent noise pollution in academic environments not only impacts human health but also reduces the resilience of ecosystems, making it challenging for both people and wildlife to thrive in shared spaces.

Universities, including the University of Ilorin, are tasked with promoting education, research, and innovation. However, noise pollution in these settings can disrupt these goals.

Long-term exposure to high noise levels reduces students' motivation and cognitive function (Ikhron et al., 2007), and these disturbances may also hinder ecosystem services provided by campus green spaces. Studies have shown that noise pollution is prevalent around educational institutions, although its levels and sources vary (Obafemi, 2006; Ugorji, 2012; Ofondu, 2015). Addressing this issue requires a comprehensive approach that considers both human well-being and environmental sustainability.

At the University of Ilorin, with over 30,000 students, various activities, including transportation, political events, and social gatherings, generate significant noise pollution. These activities, particularly during specific academic periods, may also affect the surrounding ecosystem by disturbing wildlife and altering natural soundscapes. Despite this, little is known about the specific effects of noise pollution on both student performance and the environment in the study area. Therefore, this research aims to bridge that gap by investigating how noise pollution impacts the academic performance of students at the University of Ilorin.

STUDY AREA

Ilorin is located between latitude $8^{\circ}24'$ and $8^{\circ}36'$ North of the equator and between longitude $4^{\circ}33'$ and $4^{\circ}53'$ East of the Greenwich meridian. It is the capital of Kwara state. University of Ilorin is located on Latitude $8^{\circ}28'-8^{\circ}30'N$ and longitude $4^{\circ}36'-4^{\circ}42'E$. (Agaja and Jibreel 2024). The institution is found in Ilorin South Local Government Area, as shown in Figure 1

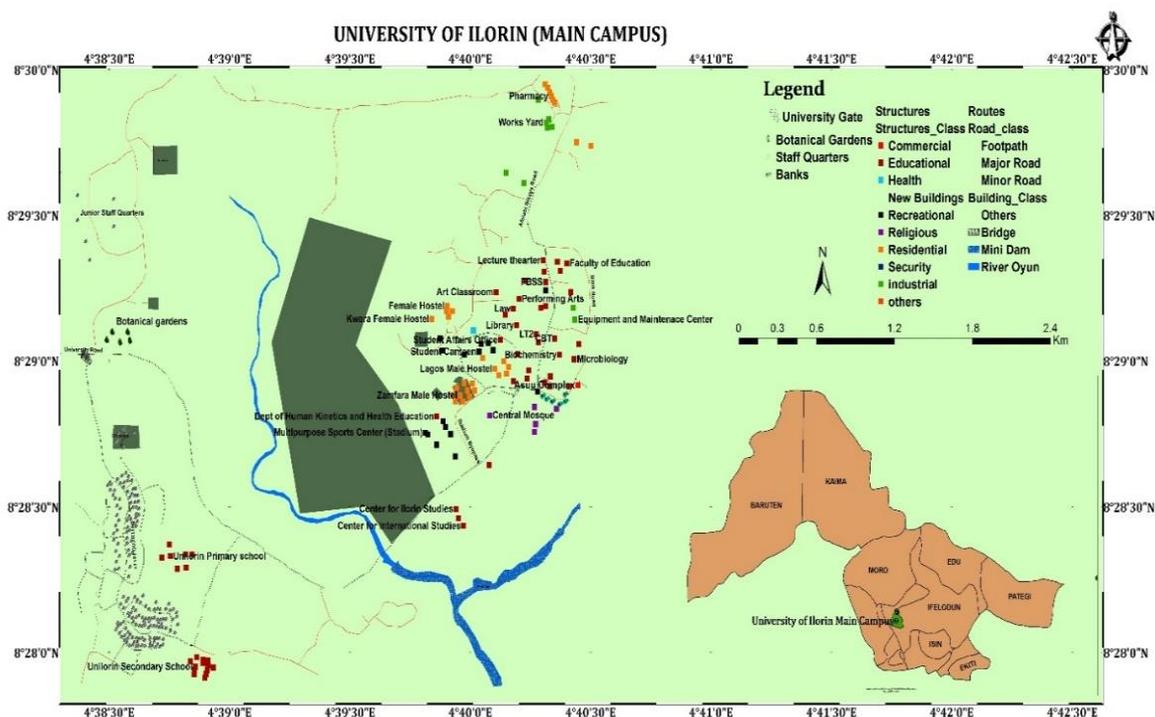


Figure 1: Map of the University of Ilorin Main Campus

Source: Adapted from Google Maps, 2020

The climate of the study area falls within the tropical hinterland climatic zone, with a dry season occurring between November and April while the rainy season is between May and October. Occasionally, there could be an earlier beginning of the rainy and the dry season. The dry season is characterized by a low amount of rainfall, high temperature, and a mean monthly rainfall total of about 360 mm. The mean annual evaporation is in the range of 1000-1200 mm; the humidity ranges between 30-80%. The relative humidity is high during the rainy season and low in the dry season. The temperature ranges between 20-30 °C (Agaja et al., 2021).

MATERIALS AND METHODS

The data required for the study encompasses several aspects, including the administrative map of the area, noise levels within the university environment, sources of noise, the effect of noise on students' academic performance, the extent to which noise affects students' health, and the efficiency of noise abatement measures in and around the campus. The data collection was conducted through field surveys and questionnaire administration. The Administrative Map of the study area was sourced online via Google Maps. At the same time, the population figures were obtained from the Office of the Dean of Student Affairs, University of Ilorin.

The principal instruments used in this research include a mobile sound meter app, handheld GPS devices, and a structured questionnaire. The sample frame for the study consists of over 50,000 students (undergraduate and postgraduate) enrolled in various academic programs at the University of Ilorin for the 2019/2020 academic session. Given the diverse nature of the university, which includes 15 faculties, over 60 academic departments, two institutes, and several research centers, a multistage cluster sampling technique was adopted. In the first stage, a sample size to be surveyed was determined from the 50,000 students using Taro Yamane's (1973) sample size formula.

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

Where n =sample size
 N = population size
 e = error of sampling

This study allows for an error of sampling of 0.05. Hence, the sample size is shown as follows;

$$n = \frac{50,000}{1+ 50,000 (0.05)^2}$$

$$n = 396.8$$

Approximately 397.

Hence, 396 students were sampled for this study. In the second stage, a systematic sampling technique was employed in selecting a minimum of 5 undergraduates, two postgraduates and two sandwich students as respondents from each of the departments in the Faculty of Arts, Agriculture, Environmental Sciences, Life Sciences, Management Sciences, Physical Sciences, Social Sciences, Communication and Information Sciences, Education, Engineering and Technology, Pharmaceutical Sciences, Veterinary Medicine, Law, Basic Medical Sciences and Clinical Sciences as well as Institute of Education and Unilorin Sugar Research Institute, Centre for Ilorin Studies, Centre for Peace and Strategic Studies and Ilorin Business School. This technique ensures a proportional representation of different categories of students (academic levels), reflecting the diversity in academic experience and needs. as well as ensuring a representation of the entire academic community, reducing biases and capturing a wide range of perspectives on noise pollution. Therefore, Students from a total of 11 Faculties participated in the study, with no less than 5.6% of respondents contributing from each of the 11 faculties. Obtaining information from a large base of respondents helped the study assess the diverse views of students with regard to noise pollution in the University of Ilorin environment. However, 396 questionnaires were successfully retrieved for the study. Table 1 shows the distribution of the questionnaire across the various faculties in the University of Ilorin.

Table 1: Questionnaire distribution across the Faculties in the study area

Faculty	Frequency	Percentage
The Faculty of Pharmaceutical Science	22	5.6
The Faculty of Agriculture	23	5.8
The Faculty of Law	38	9.6
The faculty of veterinary medicine	42	10.6
The Faculty of Engineering & Technology	34	8.6
The Faculty of Education	33	8.3
The Faculty of Social Sciences	47	11.9
The Faculty of Sciences	32	8.1
The Faculty of Communication and Information Sciences	43	10.9
The faculty of physical science	35	8.8
The Faculty of Arts	47	11.9
Total	396	100

The mobile sound meter app was used to take noise readings from all the faculties, institutes, laboratories, library among others. In each of the faculties, centers, and institutes, a minimum of four points was systematically selected for noise level measurement. Noise levels in the selected points were measured with a mobile sound meter at different periods. At the same time, the handheld GPS was used to take coordinates of areas where noise measurement was taken. The nature of noise pollution was summarized and analyzed with frequency count, percentage, weighted mean, standard deviation, coefficient of variation,

and a map of the noise pattern across the university was produced in Arc GIS, Spatial autocorrelation 10.5.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of Respondents

The majority of the respondents are male (52.8%). Although the difference between the male and female respondents is less than 5% (Table 1), this implies that females are also well-represented in the study, indicating that more females are attending tertiary institutions. Those in the age group of 18-25 years dominate the group of respondents (33.1%), followed by those in the age group of 26-35 years (31.1%), while those in the age group of 36-45 years represent just over one-quarter of the respondents' age groups. This suggests that individuals in their early twenties and mid-forties are attending tertiary institutions, which is expected as these institutions offer numerous studies appealing to anyone, irrespective of their age group. The majority of the respondents are single (71%). Over 50% of the respondents are in their second year, while 21.8% are in their first year. Understanding the demographics of these respondents is crucial, as their educational experiences can significantly influence their perceptions of noise pollution and its effects on the surrounding ecosystem.

Table 1: Demographic Characteristics of Respondents

Variables	Frequency	Percentage
Gender		
Male	209	52.8
Female	187	47.2
Total	396	100.0
Age		
18-25 years	131	33.1
26-35 years	123	31.1
36-45 years	104	26.3
Total	396	100
Marital Status		
Single	281	71.0
Married	109	27.5
Total	396	100
Program		
Undergraduate	205	51.8
Postgraduate	97	24.5
Sandwich	96	24.2
Total	396	100
Program Year		
First Year	87	21.8
Second Year	235	58.9
Third Year	54	13.5
Fourth Year	23	5.8
Total	396	100



Source: Author's Fieldwork, 2021

Spatial Distribution of Noise Level in the University

The spatial distribution of faculties in the university, from which noise level data were collected, is shown in Figure 2. In contrast, the spatial distribution of noise levels in the university is depicted in Figure 3. From Figure 2, it can be observed that most of the faculties are clustered in the center of Figure 3. The level of noise, however, varies both within and outside this cluster, impacting the surrounding ecosystem. Noise levels within the university environment range from 77.4 to 95.1 dB. Faculties such as Social Sciences, Law, and Information and Communication Science are characterized by noise levels below 82.2 dB. In contrast, the Faculties of Arts, Education, Sciences, Physical Sciences, and Veterinary Sciences tend to have noise levels exceeding 82.2 dB, which may be attributed to several activities such as drama and music rehearsal in preparation for final year project presentation as well as the population of these faculties. This implies that more noise is generated in the Art, Education, Sciences, Physical Sciences, and Veterinary Sciences faculties. A study conducted by Ugorji (2012) revealed that there is significant pollution within the educational system.

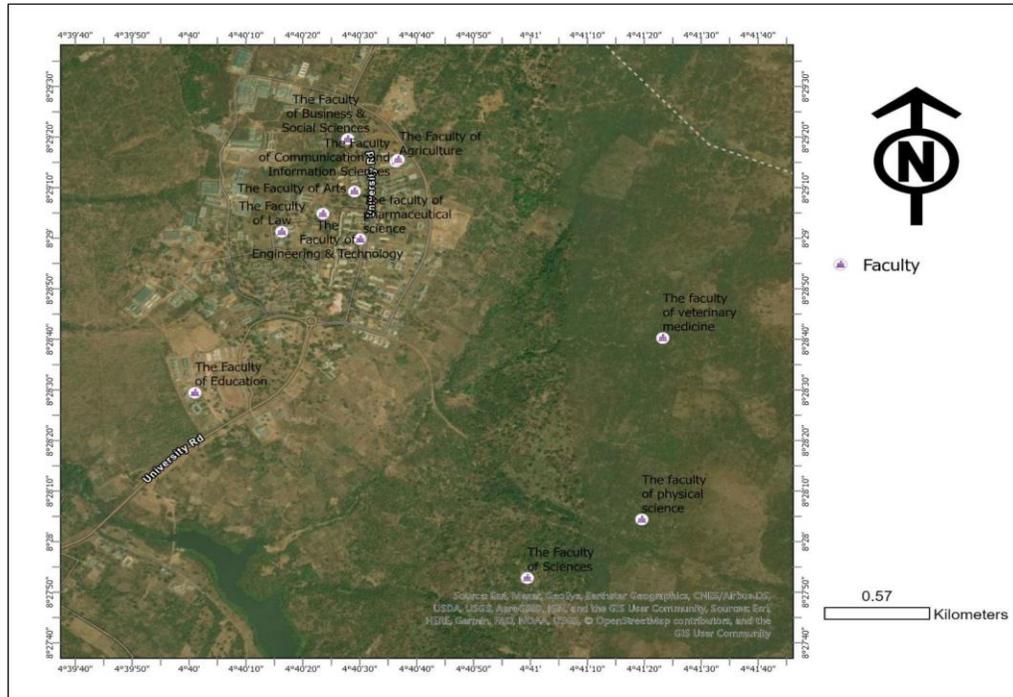


Figure 2: Spatial Distribution of Faculties in the University
Source: Author's Fieldwork, 2021

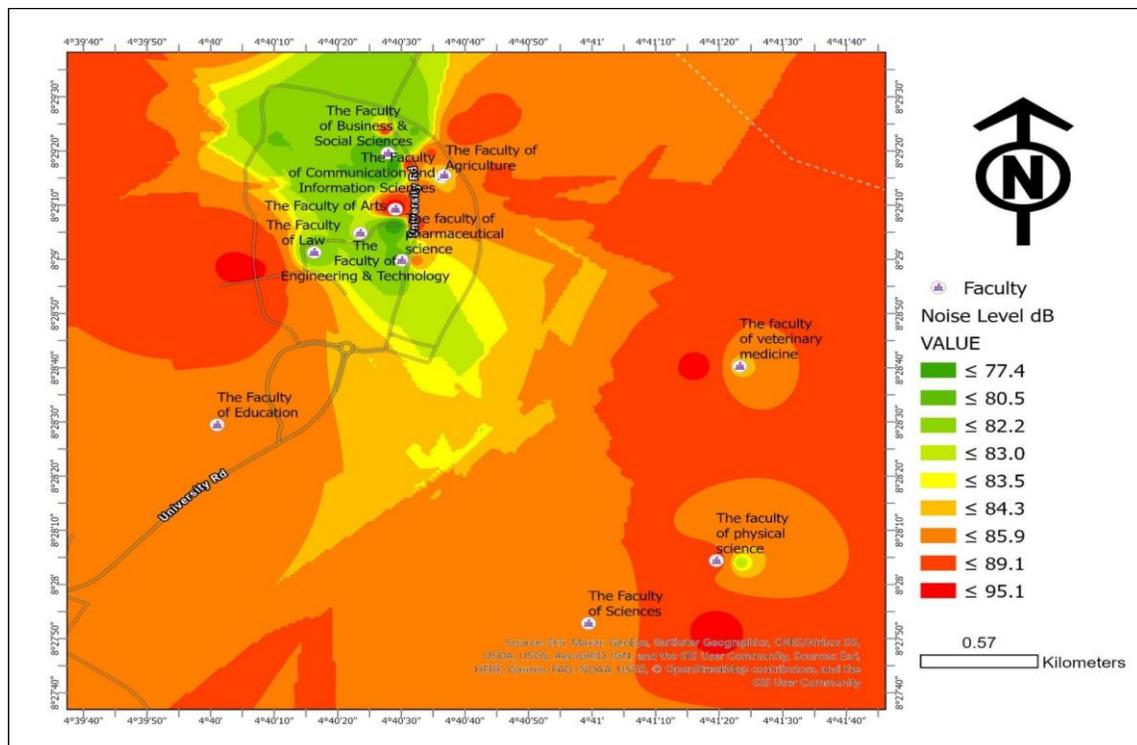


Figure 3: Spatial Distribution of Noise Level in the University Environment
Source: Author's Fieldwork, 2021

The pattern of noise distribution has a z-score of 0.78116 (Figure 4), indicating that it does not appear to be significantly different from random. This suggests that noise pollution is likely distributed randomly, possibly due to temporary or moving noise sources like student activities, vehicular movement, or generators. The results align with findings from previous studies that indicate noise-generating activities in academic environments can vary depending on time of day, campus events, or specific periods in the academic calendar (Debnath et al., 2012; Ugorji, 2012).

Similarly, Ofondu (2015), Debnath et al. (2012), and Wekpe and Fiberesima (2020) observed that the levels and causes of noise pollution vary from one study to another, highlighting the need to consider the potential impacts on the university ecosystem. Since the spatial autocorrelation is insignificant, it suggests that noise control measures need to be applied broadly rather than focusing solely on specific areas. It also raises the question of whether there are any systematic policies or environmental interventions in place within the university ecosystem to mitigate noise pollution and its effects on both student health and the local environment.

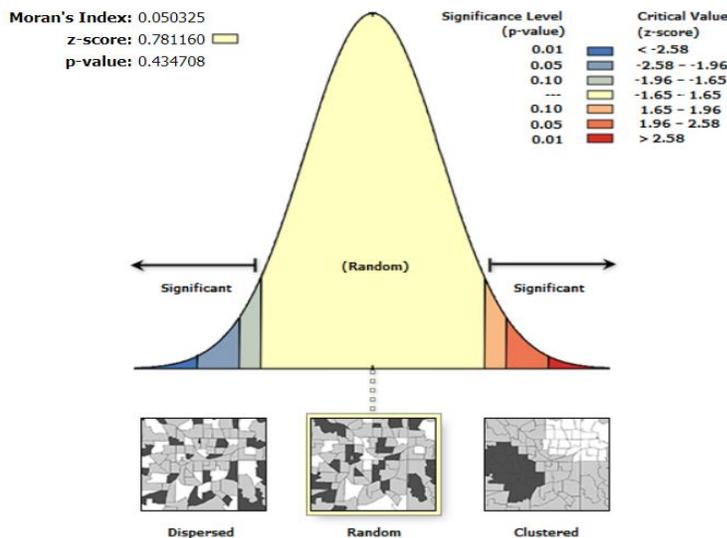


Figure 4: Spatial Distribution Pattern of Noise Level in the University Environment
 Source: Author's Fieldwork, 2021

Sources of Noise in the University

The sources of noise identified by the respondents primarily stem from student activities within the university ecosystem, including campaigns for elections, recreational activities in faculty premises, and final year events. These are seasonal activities which takes mostly in the second semesters to round up the academic session for the students (Figure 5). Additionally, generators and vehicles contribute significantly to noise pollution in the University of Ilorin. Among these sources, student campaigns generate the highest levels of noise, often accompanied by drumming and vehicle rallies aimed at garnering attention for various campaign groups. Final year activities also represent a major source of noise, frequently lasting up to a week within the faculty. The challenges posed by intermittent power supply necessitate the use of generators, which further exacerbates noise levels in the university environment. It was noted that the extent of generator

use varies across faculties; those in the sciences, where laboratory work is prevalent and requires consistent power, tend to rely more heavily on generators. This variation highlights the need for effective management strategies to mitigate noise pollution within the university ecosystem while ensuring that academic and social activities can proceed without compromising health and well-being.

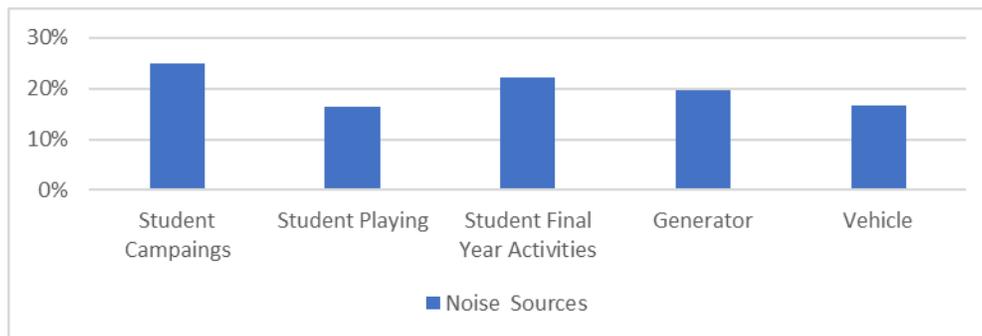


Figure 5: Sources of Noise in the University
Source: Author’s Fieldwork, 2021

The sources of noise within the university ecosystem illustrate why the spatial auto-correlation appears random. As student activities vary across the campus, noise generation arises from a diverse array of random sources and events. For instance, students occasionally play music through loudspeakers, although such occurrences are infrequent due to designated venues for social activities. An example of this is depicted in Plate 1, which shows a speaker set up for a final year event. In Plate 2, students are seen preparing to dance to the noise that will be generated from the speaker in Plate 1. Research by Obot and Ibanga (2013) indicates that noise pollution levels at the University of Uyo can peak at 89.5 dB(A) during midday hours (11 am - 12 noon), highlighting similar concerns regarding noise exposure in academic settings. The variability in noise sources, including student gatherings and events, contributes to the overall complexity of noise pollution within the university ecosystem, necessitating further investigation into its effects on student health and academic performance.



Plate 1: Student Resting on Speaker for Final Year Week Activity
Plate 2: Student Getting Set to Dance during Final Year Activity
Source: Author’s Fieldwork, 2021



Comparison of Noise Level with WHO Standard

All Faculties at the University of Ilorin exhibit mean noise levels exceedingly twice the World Health Organization's standard of 35 dB for schools (Table 2). The low coefficient of variation (CV) and standard deviation indicate that noise levels remain relatively consistent across the university ecosystem. This consistency is concerning, as excessive noise has been linked to various adverse health conditions. According to Buchari and Nazarudin (2017), noise pollution in educational environments negatively impacts the teaching and learning processes. The persistent high noise levels across the university ecosystem highlight the urgent need for interventions to mitigate these effects on both student health and academic performance. Addressing this issue requires a comprehensive approach that considers the sources of noise and their spatial distribution within the university environment, ensuring a conducive atmosphere for learning and well-being.

Table 2: Comparison of Noise Level with WHO Standard

Faculty	Mean	Standard Deviation	Coefficient of Variation	of WHO Standard for Academic Environment (dB(A))
The Faculty of Agriculture	80.48	0.30	0.37	35
The Faculty of Arts	91.23	2.74	3.01	35
The Faculty of Business & Social Sciences	86.63	2.89	3.34	35
The Faculty of Communication and Information Sciences	87.23	1.79	2.05	35
The Faculty of Law	82.43	3.73	4.53	35
The Faculty of Education	86.40	1.06	1.22	35
The Faculty of Engineering & Technology	85.65	2.36	2.76	35
The Faculty of Sciences	86.93	1.85	2.13	35
The faculty of pharmaceutical science	71.35	0.62	0.88	35
The faculty of physical science	88.38	2.28	2.58	35
The faculty of veterinary medicine	83.98	1.90	2.26	35

Source: Author's Fieldwork, 2021

Effect of Noise on Student Academic Performance

The weighted mean impacts of noise on student academic performance for undergraduates, postgraduates, and sandwich students all exceed 3.5 but remain below 4.5 (Table 3). This indicates that noise pollution significantly contributes to distractions during lectures, disrupts learning arrangements, hinders students' ability to hear lectures, impairs assimilation of information, and results in poor performance on tests and exams across the university ecosystem. These adverse effects can be attributed to noise levels that exceed the minimum standards set for educational environments. Research by Shendell et al. (2004) supports these findings, indicating that noise pollution adversely affects school performance and leads to cognitive delays, including difficulties with word discrimination, reading comprehension, problem-solving, memorization, and interference with speech communication. The pervasive impact of noise pollution within the university ecosystem underscores the need for effective strategies to mitigate these challenges and enhance the academic experience for all students.

Table 3: Effect of Noise on Student Academic Performance

Noise Effects on Academic Activities	Student	Very high Extent	High extent	Moderate Extent	Low Extent	No Extent	Weighted Mean
Distraction during lectures	Undergraduate	42.0	30.7	8.3	13.2	5.9	3.90
	Postgraduate	36.1	45.4	3.1	4.1	11.3	3.91
	Sandwich	45.7	13.8	26.6	7.4	6.4	3.85
Disruption of learning arrangements	Undergraduate	46.8	40.0	4.4	6.3	2.4	4.22
	Postgraduate	58.8	22.7	2.1	4.1	12.4	4.11
	Sandwich	55.3	18.1	11.7	8.5	6.4	4.07
Inability to hear lectures	Undergraduate	45.4	32.7	4.4	6.3	11.2	3.95
	Postgraduate	25.8	43.3	15.5	4.1	11.3	3.68
	Sandwich	48.3	27.8	8.8	7.3	7.8	4.01
Inability to assimilate	Undergraduate	54.6	19.6	11.3	5.2	9.3	4.05
	Postgraduate	39.4	25.5	21.3	5.3	8.5	3.82
	Sandwich	46.3	27.8	10.7	10.2	4.9	4.00
Poor performance in test	Undergraduate	57.7	27.8	4.1	5.2	5.2	4.28
	Postgraduate	22.3	45.7	23.4	5.3	3.2	3.79
	Sandwich	23.4	38.5	27.8	2.9	7.3	3.68
Poor performance in exam	Undergraduate	27.8	56.7	4.1	4.1	7.2	3.94
	Postgraduate	26.6	30.9	26.6	8.5	7.4	3.61
	Sandwich	42.0	30.7	8.3	13.2	5.9	3.90

Source: Author’s Fieldwork, 2021

Effects of Noise on Student Health in the University Environment

The weighted mean regarding the extent to which noise affects student health within the university ecosystem for undergraduates, postgraduates, and sandwich students all exceed 3.5 but remain below 4 (Table 4). This suggests that sudden noise can induce panic, excessive noise may lead to headaches, and prolonged exposure can cause fatigue. Additionally, noise disrupts sleep and sudden loud sounds can increase heart rate and breathing. Given these health issues, there is an urgent need to address noise pollution on campus. Research by Ikhran et al. (2007) further supports these findings, indicating that long-term and repeated exposure to noise can lead to psychological health problems and diminish students’ motivation to learn while at school. The persistent high noise levels within the university ecosystem not only threaten student well-being but also underscore the necessity for effective noise management strategies to create a healthier learning environment.

Table 4: Consequences of Noise on Student Health in the University Environment

Noise Effects on student health	Student	Very high Extent	High extent	Moderate Extent	Low Extent	No Extent	Weighted Mean
Sudden noise cause panic	Undergraduate	48.3	37.6	8.3	2.0	3.9	4.24
	Postgraduate	68.0	26.8	1.0	2.1	2.1	4.57
	Sandwich	48.9	22.3	17.0	5.3	6.4	4.02
Too much noise cause headache	Undergraduate	44.4	41.0	4.4	7.3	2.9	4.17
	Postgraduate	54.6	22.7	5.2	4.1	13.4	4.01
	Sandwich	43.6	20.2	14.9	11.7	9.6	3.77
Too much noise induce fatigue	Undergraduate	39.5	35.1	5.4	7.3	12.7	3.81
	Postgraduate	23.7	46.4	14.4	7.2	8.2	3.70
	Sandwich	45.7	26.6	6.4	12.8	8.5	3.88
Noise disrupt sleep	Undergraduate	45.9	25.9	10.7	8.3	9.3	3.91
	Postgraduate	45.4	26.8	11.3	6.2	10.3	3.91
	Sandwich	39.4	22.3	24.5	6.4	7.4	3.80
Sudden increase noise heart rate and breathing	Undergraduate	46.3	32.2	8.3	10.2	2.9	4.09
	Postgraduate	50.5	32.0	6.2	6.2	5.2	4.16
	Sandwich	60.6	22.3	11.7	3.2	2.1	4.36

Source: Author’s Fieldwork, 2021

Efficiency of the Measures of Abating Noise Pollution Adopted in and Around the School Environment

Among the measures employed by undergraduate, postgraduate, and sandwich students to prevent noise pollution within the university ecosystem, only three are deemed effective to a high extent, with a mean score above 3.5 but below 4.5 (Table 5). This suggests that scheduling lectures in classrooms located away from noise sources, conducting classes in the morning before the campus becomes crowded, and holding lectures on weekends are effective strategies for reducing exposure to noise pollution in the university environment. These findings align with the standard deviation and coefficient of variation results, which indicate that noise pollution levels remain relatively stable across the university ecosystem. Consequently, it is essential to utilize optimal times when student presence is minimal within faculty premises. Mehravaran et al. (2011) also noted that implementing wall-type barriers may represent a viable option for preventing noise pollution. The integration of such measures could significantly enhance the academic experience and overall well-being of students by mitigating the adverse effects of noise within the university ecosystem.

Table 5: Coping Measure used by the Student Handling Noise in the University Environment

Coping Measures	Student	Very high Extent	High extent	Moderate Extent	Low Extent	No Extent	Weighted Mean
Use of noise mufflers	Undergraduate	2.0	2.4	2.4	2.0	91.2	1.22
	Postgraduate	5.2	11.3	1.0	2.1	80.4	1.59
	Sandwich	1.1	2.1	17.0	5.3	74.5	1.50
Fixing lectures in lecture hall far away from noises	Undergraduate	44.4	41.0	4.4	7.3	2.9	4.17
	Postgraduate	54.6	22.7	5.2	4.1	13.4	4.01
	Sandwich	43.6	20.2	14.9	12.8	8.5	3.78
Security patrol to separate noisy gatherings	Undergraduate	5.4	12.2	5.4	48.3	28.8	2.17
	Postgraduate	6.2	22.7	14.4	46.4	10.3	2.68
	Sandwich	13.8	22.3	33.0	11.7	19.1	3.00
Fixing lectures in the morning before the school is crowded	Undergraduate	46.8	24.9	10.7	8.3	9.3	3.92
	Postgraduate	45.4	26.8	11.3	6.2	10.3	3.91
	Sandwich	40.4	21.3	24.5	6.4	7.4	3.81
Fixing lectures on weekends	Undergraduate	48.3	30.2	8.3	10.2	2.9	4.11
	Postgraduate	52.6	29.9	6.2	6.2	5.2	4.19
	Sandwich	58.5	24.5	11.7	3.2	2.1	4.34

Source: Author’s Fieldwork, 2021

CONCLUSION AND RECOMMENDATIONS

In conclusion, excessive noise is being generated within the university ecosystem, with levels surpassing the World Health Organization's minimum standards. The Faculty of Arts, Physical Sciences, Sciences, and Education are identified as areas highly susceptible to noise.. The elevated noise levels in the university negatively affect both student academic performance and health. Students primarily employ avoidance strategies to mitigate noise exposure, such as scheduling lectures in the morning before the campus becomes crowded and holding classes on weekends. While these measures are effective, they can disrupt students' routines, requiring early wake-ups and weekend attendance, which limits their rest time. This situation underscores the urgent need for more comprehensive noise reduction strategies within the university ecosystem. The study recommends use of environmentally friendly and eco-friendly energy sources like solar energy that are free of generating noise in the campus. Secondly, designated areas for student campaigns, final year activities and others should be prioritized and located far away from lecture venues and library by the school authority to curb the menace of noise that normally inhibit learning activities in the study area.

REFERENCES

- Agaja. T. M. and Jibreel, M.A (2024). Effects of Industrial Effluents on Catfish Ecosystem in Ilorin Metropolis, Nigeria. *Ghana Journal of Geography* 16(3), 120-126
- Agaja. T. M., Ajibade, L.T and Agaja, M.O. (2021). Modeling the Impact of Tillage on Water Quality for Sustainable Agricultural Development in a Savanna Ecological Zone, Kwara State, Nigeria. *Journal of Environmental Geography* 14 (1–2), 15-23. Published by Department of Physical Geography and Geoinformatics, University of Szeged, Hungary. Available online: <https://ojs.bibl.u-szeged.hu/index.php/jengeo/issue/view/2426>
- Ajao, K. R., & Oyedepo, S. O. (2011). Noise pollution mapping and environmental noise assessment of some areas in South Western Nigeria. *Journal of Environmental Science and Technology*, 4(2), 65–77.



- Babisch, W., van Kamp, I., Pershagen, G., Dzhambov, A., Peden, M., Niemann, H., Clark, C., & Swart, W. (2020). Environmental noise and health in low- and middle-income countries: Gaps and challenges. *Environmental Research*, 184, 109224. <https://doi.org/10.1016/j.envres.2020.109224>
- Buchari, A & Nazarudin, M (2017). The impact of noise level on students' learning performance at state elementary school in Medan. *AIP Conference Proceedings* 1855, 040002(1–9) Retrieved from 30th August,2023. <https://aip.scitation.org/doi/10.1063/1.4985498>
- Debnath, D., Nath, S.K. & Barthakur, N.K. (2012). Environmental noise pollution in educational institutes of Nagaon town, Assam, India. *Global Journal of Science Frontier Research, Environment and Earth Sciences*, 12(1), 1-6.
- Ikhron, A., et al. (2007). Impact of Environmental Noise on Cognitive Performance in Educational Settings: A Case Study in Developing Countries. *Journal of Environmental Psychology*, 27(3), 345–352.
- Mehravaran, H., Hosseini, S. M., Moradi, M., & Kazemi, H. (2011). Investigation of the Effectiveness of Sound Barriers in Noise Pollution Mitigation. *Journal of Environmental Management and Engineering*, 2(3), 145-153.
- Obafemi, A.A. (2006). Spatio- Temporal Analysis of Noise Pollution in Port Harcourt Metropolis. Unpublished doctoral dissertation, University of Port Harcourt.
- Obafemi, D. T. & Ofondu, N. F. (2015). Noisy School Environments in Port Harcourt Metropolis: Implications for the Performance and Health of Physics Teachers and Students. *Journal of Environment and Earth Science*. 15(14). 76-84
- Obot, O. W. and Ibanga, S. M. (2013). Investigation of noise pollution in the university. *International Journal of Engineering Research and Technology*, 2(8), 1375-1385.
- Ofondu, N.F. (2015). Effects of noise pollution on the teaching and learning of physics in secondary schools in Port Harcourt L.G.A. & Obio Akpor L.G.A. Rivers state. Unpublished undergraduate project, University of Port Harcourt
- Omubo-Pepple, V.B., Briggs-Kamara, M.A. and I. Tamunobereton-ari. I. (2010). “Noise Pollution in Port Harcourt Metropolis: Sources, Effects, and Control”. *Pacific Journal of Science and Technology*. 11(2):592-600.
- Shendell, D. G., et al. (2004). Environmental noise pollution: Effects and prevention. *Environmental Health Perspectives*, 112(8), 987-994.
- Ugorji, O.M. (2012). Effects of noise pollution on learning in Port Harcourt. Undergraduate project of University of Port Harcourt
- Wekpe, V.O. and Fiberesima, D. (2020). Noise Mapping around the Host Communities of the University of Port harcourt, Nigeria. *Art Human Open Acc J*. 4(2):43–48. DOI: 10.15406/ahoaj.2020.04.00151



- WHO (2004). The Physical School Environment, an Essential Component of a HealthPromoting School (WHO/PHE and WHO/NPH). Available Online: www.who.int/school_youth_health/med... (accessed on March 3rd, 2016).
- WHO (2011). Burden of Disease from Environmental Noise – Quantification of Healthy Life Years Lost in Europe. Copenhagen: WHO Regional Office for Europe. Available Online: <http://www.euro.who.int/./e94888.pdf> (accessed on January 16th, 2016)
- Woolner, P. and Hall, E. (2010). Noise in schools: A holistic approach to the issue. *International Journal of Environmental Research and Public Health*, 7, 3255-3269
- Yamane, T. (1973). *Statistics: An introductory analysis* (3rd ed.). Harper & Row.