Global Journal of the Built Environment
(Published by the School of Environmental Studies, Federal Polytechnic Nasarawa)
Available Online at: www.gjbeses.org

Perception of Students on Noise Level Influence of Selected Evening Reading Classes in Umaru Ali Shinkafi Polytechnic, Sokoto

Bunyamin Ayodeji OLAWUMI[1] and Isiyaku ABUBAKAR[1]

[1] Department of Building Technology, Umaru Ali Shinkafi Polytechnic, Sokoto

Corresponding author's e-mail: bolayo20@gmail.com

Abstract

This research presents perception of students on noise level influence in three most common evening reading classes in Umaru Ali Shinkafi Polytechnic, Sokoto, Nigeria. A well-structure questionnaires were administered to students reading in those classes to gather information for the study. A total number of 192 questionnaires were given out to the respondents (students) out of which 166 (86.50% returned rate) were retrieved. The questionnaires were distributed randomly in line with random sampling approach. The study thus revealed that majority of the respondents are of the view that discussion within and outside the reading classes is the main source of noise generation followed by moving vehicles and phone call. However, the study also identified distraction, provoking and discomfort as the inconveniencies resulted from excessive noise in the reading classes. Hence, most of the respondents therefore suggested that restriction of car movement, banning of music and hawking and restriction on the use of cell phone should be enforce by the management of the institution. It was however concluded that if all the measures and control of noise suggested in this research were taken into consideration at the construction stage and during maintenance, noise level would be reduced in the tertiary institution.

Keywords: Evening, Noise level, Perception, Reading classes, Sokoto, Tertiary institution.

1.0 Introduction

Noise is termed as unwanted sound that may be hazardous to health, interfere with speech, verbal communication as well as resulting in disturbance and irritation. The word 'Noise' is derived from Latin word 'nausea' which means 'unwanted sound' or 'sound that is loud, unpleasant or unexpected (Narendra & Davar cited in Stanley et al., 2017). Meanwhile, Hoshcore (2016) also described noise as any undesirable sound that occurs as a result of the activities of man, such as verbal interaction and communication, playing of music loudly or man's activities with object that results to sound.

According to Adejobi (2012) noise effect quantities on population growth in terms of

economic, social development and population increased the tendency towards noise generation. Thus, effects of the noise generation lead to growing health treat and hazardous condition. Filippi (1998) established that sound pressure level is dependent on power output of the noise source and environment. It was further stated that noise characterised by the intensity, frequency, periodicity and sound duration. Moreover, it is being referred to as an acoustic, electric or electronic signal consisting of random mixture of wavelength. Both the sound and noise are measured in decibel (Miglani, 2010; Government du Quebec, 2021). Therefore, the standard measurement of whisper sound is 20dB, noise in quite office expected not to be more than 40dB, the normal conversation should not exceed 60dB and a level of sound above 80dB is referred to as noise (Miglani, 2010).

Stanley et al. (2011) and Mbamali *et al*. (2012) posited that building indoor environment is always associated with exposure to indoor pollutants in which air and noise pollutions are predominance. And according to Nathaniel (2007) and Pathak et al. (2008) recognised noise pollution as a product of urbanization and industrialization in urban areas with many adverse effects. Stanley *et al*. (2017) also postulated that noise and other forms of pollution are hazardous and threat to quality of human life. However, the most common sources of noise pollution in urban areas are vehicular traffic, railways, air traffic among others (Oyedepo & Saadu, 2010). World Health Organisation (WHO) averred that children with continuous disruptive noise could experience low reading ability, memory lost and poor academic performance. The organisation suggested that safe level of noise in a classroom should not exceed 35dB. Thus, anything above that impairs the ability to learn (Knauf, 2024).

Moreover, noise pollution has been noticed by many academic scholars in building profession as one of the factors that affect conducive environment for learning in higher Institution. According to Edene and Eghomwanre (2023) exposure to high level of noise in school could results adverse effects on the health and performances of students and teachers. As such, researches had been conducted on the effect of noise pollution and noise level characteristic of selected libraries within higher institution of learning. The results showed that, most of the noise generated in tertiary institution are above the maximum standard stipulated in World Health Organization (WHO), National Environmental Standards and Regulations Enforcement Agency NESREA), British Standard (BS), American National Standard Institute (ANSI) among others. However, these studies only considered the perception and views of the respondents on the causes of noise and its influence on the students in the study area.

2.0 Literature Review

Kanu et al. (2022) studied and measured noise level in some selected locations in a Tertiary Institution (TI) and a Public Hospital (PH) in Jalingo, Taraba State, Nigeria. The results deduced that noise level was insignificant in PH but significant in TI, especially, the business centre. And the values obtained in TI were higher than the maximum values recommended by World

Health Organisation (WHO), United States Environmental Protection Agency (USEPA), and the National Environmental Regulation (Noise Standards and Control) (NER). A similar research was conducted by Olamijulo *et al*. (2016) where risk factor of electric power generator noise level in an institutional setting at the University of Ibadan, Nigeria, was studied. It was inferred that the noise levels in all places studied together with libraries within the Universities were above the WHO stipulated limits of 35dB. This consequently resulted in headache, tiredness and tinnitus as revealed by majority of the respondents.

Furthermore, Umar *et al*. (2023) carried out a study on noise pollution as a menace to learning in typical Nigeria tertiary institution. The research was conducted by assessing students' perceptions on noise pollution in some lecture halls within Federal University of Technology (FUTO), Owerri, Imo State, Nigeria. It was revealed that the major causes of noise in lecture halls are generators, automobile and echo of noise from adjacent buildings. The studies found that noise exposure in the study area affects listening ability, students' concentration and reading ability. Edene and Eghomwanre (2023) also studied the evaluation of indoor noise exposure and related health risks in selected offices, classrooms and laboratories in a tertiary institution within Edo State, Nigeria, with the use of digital sound lever meter (Smart Sensor Model AS824). The results inferred that, the mean level of noise in the studied areas exceeded the WHO and NESREA limits for allowable noise in educational facilities. The study also observed that in the classrooms, noise level was significantly higher than that of offices and laboratories.

A research on noise level characterisation of selected libraries in Ahmadu Bello University, Zaria, Kaduna State, Nigeria, was conducted by Stanley *et al*. (2017). The study assessed noise level by measuring the sound level within the libraries and also responses on students' perception as libraries users. It was deduced from the respondents that group discussion, traffic, dragging of furniture and use of cell phones within and outside the libraries are the common sources of noise. The research also revealed that entrance and stairways were identified as the noisiest location in those libraries studied. The results obtained from the sound level meter showed that permissible noise level stipulated in all standards referred to are exceeded. Such as; British Standard (BS 8233), National Environmental Standards and Regulations Enforcement Agency (NESREA), World Health Organization (WHO) and American National Standard Institute (ANSI). Hence, this has negative effect on the students using the libraries and perhaps influence their academic performance. Thus, this study bridged the gap of Stanley *et al*. (2017), Edene and Eghomwanre (2023) and Umar *et al*. (2023) by studied noise influence in the evening reading classes in Nigerian higher institution. The internal and external sources of noise within the premises of those classes and the level of inconveniencies of noise on the health of the students were suggested by respondents. Consequently, the necessary control and measures were also proffered in the study.

3.0 Methodology

The research was conducted as field survey research. Structured questionnaire was designed to gather information on perception of respondents (students reading in those Classes) on noise level influence on the reading classes in the study area. However, the three reading classes considered for this study are Higher National Diploma in Building Technology II (HNDBT II), National Diploma in Electrical Engineering I (NDEE I) and National Diploma in Business Administration and Management II (NDBAM II). This is based on the population of the students reading in those classes per day.

Moreover, a population of 373 was drawn from the three reading classes in which corresponding 192 sample size correspond to population from population/sample size table was adopted for the study. Meanwhile, stratified random sampling procedure was adopted in selecting respondents in the study area. This was done to ensure a fairly equal representation of the variables for the study. A total of 166 questionnaires were returned out of 192 administered. This gives a response rate of 86.5%. Thus, data received were presented in both pie charts, bar charts and tabular forms.

However, 4 point Likert scale survey (forced) method was adopted to compelled the respondents to form an opinion on questions addressing the objectives of the study on either way, such as; Agree and disagree without Neutral opinion (David, 2024). Information retrieved from this study were analysis using simple percentage method and finding from the research were drawn

4.0 Results and Discussion

The results obtained in this study are based on the information received from respondents through questionnaires administered. These are presented in both tabular and charts formats. All the presentations were discussed directly below the charts and tables accordingly.

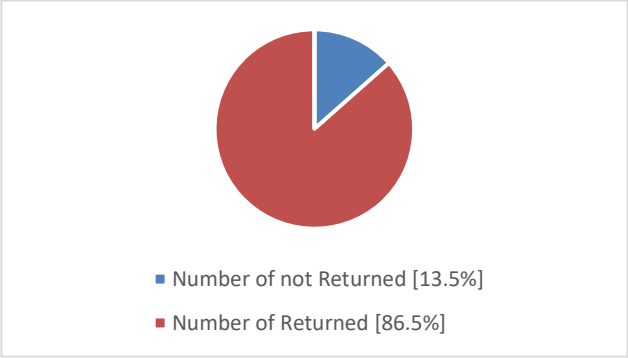

Figure 1: Graphical Presentation of Questionnaires' Administration.

The total number of questionnaires given out is 192. Out of which 166 (86.5%) were returned and 26 (13.5%) were not retrieved back from the respondents. This is clearly shown in the pie chart presented in Figure 1. The percentage returned is more than half of the numbers given out. This indicates satisfactory responses.

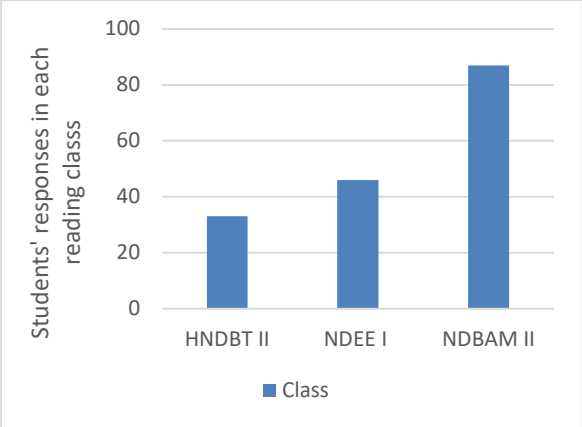

Figure 2: Selected Reading Classes

Figure 2 presents the selected reading classes sampled and total numbers of the students responded to the questionnaires. The first bar represents Higher National Diploma in Building Technology II (HNDBT II) students, the second bar shows National Diploma in Electrical Electronic I (NDEE I) and the last bar presents National Diploma in Business Administration and Management II (NDBAM II). It was deduced that, 33 (19.88%) students responded to the questionnaires in HNDBT II, 46 (27.77%) in NDEE I class, whereas 87 (52.41%) attended to the questionnaires in NDBAM II class. However, the highest number of responses recorded in NDBAM II may be attributed to the higher number of students usually admitted in the Department of Business Administration and Management.

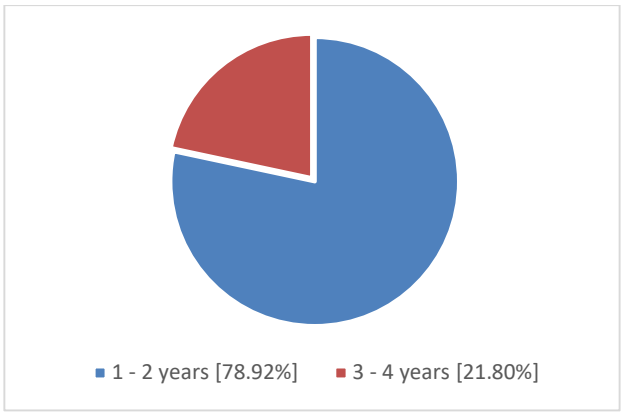

Figure 3: Variation in Number of Years Spent in the Institution

The total number of years expected to spend in the Polytechnic to study both National Diploma and Higher National Diploma programme is 4 years. Figure 3 above shows variation of years spent by students that filled questionnaires and returned them. Meanwhile, 1-2 indicates those that spent within the range of 0 to 2 years, while, 3-4 represents those within the range of 3 to 4 years of experience in the Polytechnic.

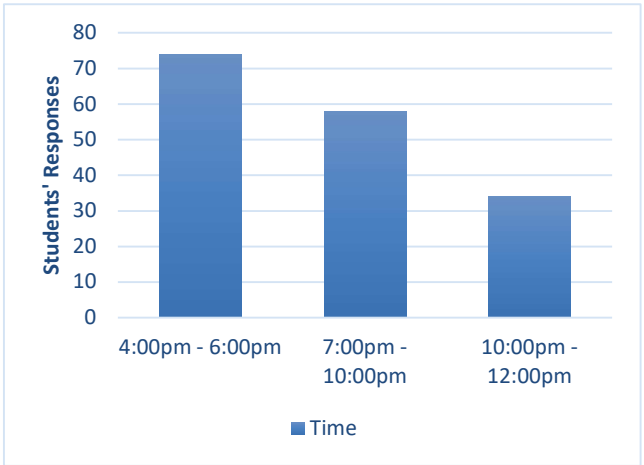

Figure 4: Time Spent by Students in the Selected Reading Classes

The falling in the height of the bar from first to second to third in Figure 4 above explicitly showed that most students preferred reading in the evening and not

throughout the night popularly known as *till day break*. The 4:00pm – 6:00pm bar has the highest number of responses followed by 7:00pm – 10:00pm and 10:00pm – 12:00pm respectively.

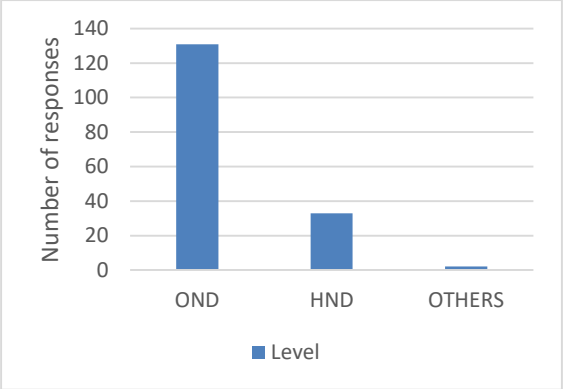

Figure 5: Academic Level of the Respondents

Looking at the Figure 5, it can be deduced that, Ordinary National Diploma (OND) students are the majority of the respondents in this study with the total number of 131 (78.92%), Higher National Diploma (HND) students are second with 33 (19.88%) and other students studying a year programme (such as; Certificate programme) reported as 2 (1.20%) respectively.

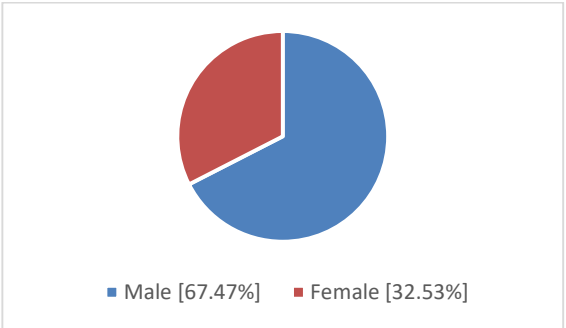

Figure 6: Gender of Respondents

Gender of respondents is presented in Figure 6 as pie chart. However, the number of male students responded to the questionnaires are 112 (67.47%), while, female respondents are 54 in numbers with percentages of 32.53%. This implies that, approximately 68% of the information were obtained from male students in the institution.

Table 1: Source of Noise Generation in the Premises of Reading Classes

	Respondents Frequency and Percentage				
Source	(SA)	(A)	(DA)	(SD)	Total
1. Discussion	94 (56.63%)	68 (40.96%)	4 (2.4%)	0 (0%)	166 (100%)
2. Moving vehicles	87 (52.41%)	46 (27.71%)	31 (18.67%)	2 (1.20%)	166 (100%)
3. Phone call	57 (34.34%)	64 (38.55%)	35 (21.08%)	10 (6.02%)	166 (100%)
4.Wind	54 (32.53%)	58 (34.94%)	45 (27.11%)	9 (5.42%)	166 (100%)
5. Rain	47 (52.41%)	64 (27.71%)	39 (18.67%)	16 (1.20%)	166 (100%)

6. Hawking / Begging	48 (28.92%)	53 (31.93%)	35 (21.08%)	30 (18.07%)	166 (100%)
7. Music	38 (22.89%)	24 (14.46%)	47 (28.31%)	57 (34.34%)	166 (100%)

Legend: Strongly Agree (SA), Agree (A), Disagree (DA), Strongly Disagree (SD)

As shown in Table 1 above, 56.67% of the respondents strongly agreed that discussion in the classes and their premises is the main source of noise generation in the study area while 40.96% agreed. This indicated that 97.63% agreed that discussion is the main source of noise generation whereas only 2.4% disagreed. However, moving vehicles were selected as the second source of generating noise in the reading classes sampled with 80.12% agreed and 19.87% disagreed, closely followed by noise from phone call in which 72.89% agreed on it while 27.10% disagreed and not in support. This results concurred with Stanley *et al*. (2017) and Knauf (2024) which affirmed that discussion, moving vehicles, chair scraping the floor, nearby play area, neighbouring classrooms and the use of cell phones are the most common sources of noise in libraries and premises of tertiary institution. Moreover, noise generated from the wind, rain, hawking/begging and music were also picked as 4th, 5th, 6th and 7th respectively according to Table 1.

Table 2: Level of Inconveniencies of Noise to Students in the Reading Classes.

	Respondents Frequency and Percentage				
Level of inconveniencies	**(SA)**	**(A)**	**(DA)**	**(SD)**	**Total**
1. Distraction	75 (45.18%)	88 (53.01%)	3 (1.81%)	0 (0%)	166 (100%)
2. Provoking	83 (50.00%)	71 (42.77%)	10 (6.02%)	2 (1.20%)	166 (100%)
3. Discomfort	48 (28.92%)	58 (34.93%)	44 (26.50%)	16 (9.64%)	166 (100%)
4. Loss of memory	47 (28.31%)	54 (23.53%)	45 (27.11%)	20 (12.05%)	166 (100%)
5. Loss of hearing	0 (0%)	0 (0%)	78 (46.99%)	88 (53.01%)	166 (100%)

Legend: Strongly Agree (SA), Agree (A), Disagree (DA), Strongly Disagree (SD)

According to Table 2, it shows that distraction while reading in the class causes inconveniencies and as such affect the level of assimilation, especially when examination is approaching with 98.19% agreed and only 1.81% disagreed. This is followed by provoking with those agreed on it are 92.77% and those disagree are 7.22%. Meanwhile, level of discomfort was ranked third as one of the effect arose from noise in reading classes with respect to the study area. In view of this, 63.85% of the respondents agreed whereas 36.14% disagree on it.

The last two factors considered as 4th and 5th are loss of memory and loss of hearing. These responses are in conformity with Knauf (2024) who established that according to World Health Organisation (WHO) excessive noise in the libraries or classes affect academic performance through distraction caused by too much of noise, poor hearing of lesson clearly, poorer reading ability and memory loss. Studies by Olamijulo et al. (2016), Stanley et al. (2017) and Edene and Eghomwanre (2023) have also attributed the inconveniences caused by excessive noise in tertiary institution of learning to loss of concentration, mental illness, development of hypertension (high blood pressure), hearing impairment, tinnitus, ear pains, headache, stress, discomfort, fatigue among others.

Table 3: Noise Control Measures adopted in the Premises of the Reading Classes.

	Respondents Frequency and Percentage				
Noise control measures	(SA)	(A)	(DA)	(SD)	Total
1. Restriction on use of phone	14 (8.43%)	29 (17.47%)	70 (42.17%)	53 (31.39%)	166 (100%)
2. Banning of Music	12 (7.23%)	25 (15.06%)	68 (40.96)	61 (36.75)	166 (100%)
3. Banning of Hawking	23 (13.86%)	12 (7.23%)	60 (36.14%)	71 (42.77%)	166 (100%)
4. Restriction of Car Movement	2 (1.20%)	4 (2.41%)	70 (42.17)	90 (54.22%)	166 (100%)

Legend: Strongly Agree (SA), Agree (A), Disagree (DA), Strongly Disagree (SD)

Table 3 presents control measures adopted in tackling noise effect in the reading classes of the study area. The results indicated that, 25.9% of respondents agreed that restriction on the use of phone within the reading classes is the best option to reduce noise in the study area, while, 73.56% disagreed on the option. The Table also showed that 22.29% agreed that playing of music in the vicinity of the reading classes should be prohibited whereas majority with 77.71% disagreed. Moreover, 21.09% of the respondents also agreed that hawking of any kind of commodity should be banned and discouraged around reading classes but 78.91% disagreed. However, the studies of

Chandra et al. (2009), Kanu et al. (2022), Edene and Eghomwanre (2023), Umar et al. (2023) and Knauf (2024) suggested that all the factors responded to in Table 3 above can even be taken care of during construction or at the time of maintaining buildings reserved for reading. Such as; installation of noiseless doors and windows, installation of sound and noise insulating materials, building and furniture materials to be recommended for classes should possess noise and absorption properties.

5.0 Conclusion and Recommendation

This study revealed that higher percentages of the noise generated in the evening reading classes are from students through discussion, driving of cars, phone calls among others. Hence, this noise resulted in discomfort and distractions which directly influenced assimilation. Meanwhile, restriction of car movement, banning of music and phone call within the premises of reading classes were suggested as the measures to mitigate noise influence in the study area. It is expected that if all the necessary measures proffered in this research work are considered, noise influence and noise pollution would be mitigated in the tertiary institution reading classes.

Recommendations

1. If possible, management of tertiary institution should encourage students to always put their mobile phones on silent before entering reading classes or libraries.

2. Students should be discouraged from playing of music in and outside of the reading classes so as to avoid distraction and reduction in assimilation.

3. Hawking should be prohibited by management of tertiary institution within the premises of the identified evening reading classes.

4. Group discussions should also be discouraged in the reading classes.

5. School security personnel could be instructed to be moving around the reading classes once in while so as to maintain sanity among the students.

6. Further research could be conducted on large numbers of reading classes and the sound level could also be measured with the measuring devices.

References

Adejobi, O. S. (2012). Spatio-temporal analysis of noise pollution level in Lagos State. Oshodi-Agege Rout experience. European journal of globalization and development research, 5(1): 266-286.

Chandra, A. M., Ghosh. S., Barman, S. & Chakravarti, D. P. (2009). Ergonomic issues in academic libraries in Kolkata, West Bengal: A pilot study on libraries philosophy and practice. http://www.webpages.uidaho.edu/mbolin/chandra-ghost.pdf.

David, E. (2024). What is Likert Scale: Definition, types, examples and questions. https://www.proprofssurvey.com.

Edene, A. O. & Eghomwanre, A. F. (2023). Indoor noise exposure and related health risks in a tertiary institution within Edo State, Nigeria. Journal of Applied Science and

Environmental Management, Vol. 27 (3). https://www.ajol.info/index.php/jasem/article/view/244821.

Filippi, P. (1998). Acoustic, basic physics, theory and methods. Academic press

Government du Quebec (2021). Effect of environmental noise on health. The environmental protection agency.

Hoschore. (2016). Noise and vibration control: The acoustic product and system.

Kanu, M. O., Targema,T. V., Isa, J. & Nyusamiya, J. (2022). Assessment of noise pollution in a hospital and a tertiary institution in Taraba State, Nigeria. Journal of Materials and Environmental Science, vol. 13 (10), 1137-1154. http://www.Jmaterenvironsci.com. University of Mohammed Premier, Oujda, Morocco.

Knauf, D. (2024). The effect of noise pollution in the classroom. https://www.knaufnorthamerica.com/en-us/blog/effect-of-noise-pollution-in-the-classroom.

Mbamali, I., Stanley, A. M. & Zubairu, I. K. (2012). Environmental hazards of fossil fuel generators for electricity supply to buildings in Nigeria. Canadian journal on Electrical and Electronics Engineering, 3(10), 505-509.

Miglani, D. G. (2010). Noise pollution sources, effects and control. http://depssa.ignou.ac.in/wiki/index.php/Noise_pollution.

Nathaniel, M. M. (2007). Noise pollution: The sound behind heart effects. Environ Health Perspective, 115(11), A536-7.

Olamijulo, J.O., Ana., G. R. & Morakinyo, O. M. (2016). Noise from portable electric power generators in an institutional setting: A neglected risk factor. International Journal of Environmental Monitoring and Analysis, 4(4), 115-120.

Oyedepo, O. S. & Saadu, A. A. (2010). Evaluation and analysis of noise levels in Ilorin metropolis, Nigeria.

Pathak, V., Tripathi, B. D. & Mishra, V. K. (2008). Evaluation of traffic noise pollution and attitudes of exposed individuals in working place. Atmos Envion, 4a (16):3892-8. Doi:10.1016/ j.atmosenv.2007.12.070.

Stanley, A. M., Mudutgap, N. E., Andrew, S. S. & Dadu, D. W. (2017). Noise level characterisation of selected libraries in Ahmadu Bello University, Zaria, Nigeria. Journal of Environmental Design and Management, vol. 9 (2). ISSN: 2006-8167.

Umar, T. M., Emmanuel, N. T., Chukwuemeka, I. G., Charles, U. C., Ogbonnaya, A. (2023). Noise Pollution a menace to learning in typical tertiary institutions in Nigeria. Asia Journal of Environmental & Ecology, vol. 21 (2), 18-26. https://www.researchgate.net/publication/371768021.