International Journal of Innovative Technology and Exploring Engineering (IJITEE)
ISSN: 2278-3075 (Online), Volume-9 Issue-7, May 2020

Interior Design Features of Architectural Studios in Private Universities in Ogun State, Nigeria: Implication for Students Academic Performance

Emokpae M. Erebor, Eziyi O. Ibem, Isidore C.Ezema, Ajagba P. Benson

Abstract: ***Interior design is on the one hand a multi-faceted profession in which creative and technical solutions are applied within a structure to achieve a built environment or improve a learning space. An architectural design studio on the other hand is a classroom space in the undergraduate or graduate professional class where students receive hands-on instructions on architectural design. However, the interior design features of architectural design studios and the implication of these for students' academic performance has not been clearly articulated in the research literature. Therefore, the aim of this research was to investigate the interior design elements of architectural design studios and its implication for students' academic performance. This is with a view to suggesting how the interior spaces of architectural design studios can be man manipulated to enhance students' academic performance. To achieve this goal, three private Universities in South West Nigeria were studied using the data collected from 200 undergraduate and post graduate students. The data were analyzed using descriptive statistics and the results revealed that most of the students were satisfied with the interior design of their architectural studio spaces. It was further observed that students were not aware of the conduciveness and wellness of their studios, hence more work needs to be done on the general interior design to ascertain the wellness of the studios. The design studio being a sole environment where both theoretical and practical learning and work is carried out should be made comfortable for the users of the space. There is a fact that people work better in places that they feel comfortable in. Personal space has a direct impact on learning, and designers must take this into consideration when designing Architectural design studios.***

Keywords: Architectural Studio, Built Environment, Interior Design, Students Performance

I. INTRODUCTION

The National council for interior design qualification of America [1] defined interior design as a multi-faceted profession in which creative and technical solutions are applied within a structure to achieve a built environment.[2] [7] believes that by its nature, interior design aims at solving interior design problems by intervening in a particular way towards improving students' performances in architectural design studio. Authors [3] [22] have identified interior design elements as affecting the design of studio environments, and the environments have directly affected student's performance. They go on to say that when an interior environment is designed properly, it plays a positive role in making people happy and they feel energized and vice versa.

Students of architecture spend a considerable amount of time in their design studio and poor quality studio environments can create learning barriers such as impaired concentration for many students who will be distracted by negative attributes in their architectural design studios [14] Furthermore, for students spending a large proportion of their education in architectural design studios, it is not surprising that interior design plays a significant role in influencing the behavior and development of such students. From the psychology of colors to classroom furniture and greenery, we are examining how the science behind interior design can have a significant impact on the academic performance of students in their design studio and boost productivity, wellbeing and learning progress [4]. Colors in architectural design studios have a profound effect on student's performance whereby it evokes different emotions for instance, blue and green are often seen as calming colors, while vibrant hues like orange, yellow and red are associated with warmth, creativity and comfort. Incorporating different colors throughout the architectural design studio could help stimulate student's performance more effectively. In recent years, it has been found that introducing greenery in design studios as an interior design element has numerous benefits, which include improved air quality, productivity and wellbeing. Beyond their air purifying properties and attractive aesthetics, indoor plants create a natural and calming atmosphere, as well as provide an opportunity to get students involved in caring for them. Another key aspect of interior design strategies in architectural design studios include ergonomically designed studio furniture to a well thought-out layout and engaging wall displays and all other elements that can influence concentration and performance of students. According to authors [13 &21], sound and acoustic environment of an architectural design studio is a critical factor in the academic and psychosocial performance of students in design studios. Student's performance in architectural design studios have been investigated in the past in relation to interior design elements and lighting layouts [10] and the effects of climate in the design studio on student's performance [2].

Revised Manuscript Received on May 30, 2020.
***** Correspondence Author
Emokpae M.Erebor*, Architect and Teaches at Covenant University, Ota Nigeria.
Professor Eziyi O. Ibem , Architecture, University of Nigeria, Enugu Campus, Enugu Nigeria
Dr Isidore C.Ezema, Architecture, Covenant University, Ota, Nigeria.
Ajagba P.Benson, Student, Department of Architecture,Covenant University Ota Ogun State.

For examples, [1] carried out a survey and found that the physical aspects of an architectural design studio, such as color, light and air quality, could potentially improve architectural students learning progress by up to 16%. Therefore, ensuring these physical characteristics are taken into consideration and optimized, is crucial to influencing student's performance. These findings are inclusive, especially as they relate to the situation in private universities in Nigeria.

In view of the foregoing, this research sought to investigate the influences of interior design of architectural design studios on students' academic performance in private universities in Ogun State, Nigeria with a view to identifying the basic design features that can enhance student's academic performance within the studio learning environment. The specific research question addressed in this study was: What are the specific interior design features and elements that influence students' academic performance in architectural design studios. The major contribution of this research to scientific knowledge is that it identifies specific areas that need more attention in the spatial arrangement and organization of interiors of architectural design studios in order to enhance students' performance in architectural design studio tasks.

II. LITERATURE REVIEW

Interior Design and Architectural Design Studios

According to [3], Interior Design deals with how a person or a group of people use and enjoy the sp aces that they use. These authors further explained that a good interior design transforms a space and increases the efficiency in the way users of the space go about their daily lives and it adds depth, understanding and meaning to a built environment. In the light of this, the ultimate challenge of interior design centers on trying to meet the requirements of functionality and aesthetics when designing. The effort to meet all these requirements would make use of certain design elements by arranging the characteristics of these elements into one as observed by [4]

Nurturing student's ability for creative problem solving is one of the important purposes of education as revealed by [1] and [9] believe that this can lead to creativity which is a desirable graduate attribute. A large number of students in the field of architecture spend the majority of their time in their design studios where they learn the various skills and get the required knowledge needed in the world of practice [12]. The architecture studio is where they get an understanding of what is required of them as architects. Schools can increase their students' attitude to work by providing a good working environment. Good enough, interior elements have been found to influence working environments and this in turn has massive influence on the users. This is because a well-designed environment creates an atmosphere of happiness, serenity and energy [22].

Studies have shown that different interior design elements influence students' performance in architectural design studios. These elements include lighting, ventilation, type and arrangement of furniture and space. As it relates to lighting, it is known that an environment with properly designed lighting can quicken the recognition of things, relieve eyes strain and also increase visual stability. Students' ability to pay attention is based on various factors including lighting [2]. Researchers have found that adequate lighting reduces off task attitude to work and hence improves academic results [11].

Ventilation refers to the supply and removal of air by natural or mechanical means. A previous study argued that the expansion of classroom ventilation rates can improve the academic accomplishments of the students. There is also the view that sustaining thermal comfort and sufficient ventilation could increase an average test score of students [23]. Related to this is the type and arrangement of furniture in learning spaces. Most architectural studios have their drawing boards aligned in rows and have been realized to make students lose focus and allow for disruptions within the studio. This type of arrangement doesn't encourage the interactions of students because the students will be more interested in completing their own work. Students as social beings require attention and assistance from time to time and lack of these leads to a negative attitude to work.

Further is the element of space. Space is the area where everything else is arranged and to which it is a reference. A well planned and organized architectural studio spaces enable their efficient use in such a way that they are orderly, creating a more stimulating feeling. The different spaces convey different feelings. For instance, big open spaces give its user a sense of freedom and luxury while empty spaces cause loneliness and discomfort.

Factors influencing Architecture Student's Academic performance.

Architecture has been described as one of the fields that consists of science, History of Architecture, Geography, Culture, Economics, Arts and Management [19]. Architecture is all about the physical factors or elements which combined the elements of art and science. Therefore, architecture consists of three basic human needs which include the protective elements, artistic and symbolic and also the economy [23]. In addition, architecture is known to provide a distinctive meaning to human beings because it reflects the culture of each of the individuals and groups of the community. Architectural education as an important tool in sustaining the health and general productivity of the populace and invariably the achievement of a great and dynamic economy [18]. Unfortunately, many developing countries in Africa, particularly, Nigeria, the benefits of higher education are yet to be fully maximized. Two main reasons have been advanced on why Nigeria was yet to properly articulate development strategies that link knowledge with economic growth and lack of capacity to do so [18]. Generally, building the capacity required to achieve this has been constrained by several challenges including poor funding, inefficiency, inequality, declining quality and poor governance [8]. This is further compounded by poor students' academic performance leading to increase in student attrition rates and the inability of graduating students to make a meaningful contribution to building the nation.

Factors that can influence a student's performance could either be internal or external. Previous study [6] has observed that at the tertiary level, academic performance is very important in determining the class of degree a student will eventually graduate with. However, it believed that each student will show a different level of academic performance and this can be attributed to various factors that influence the student.

Other author [17] are of a different opinion in noting that students' academic performance in architectural design studio environment is influenced by two factors: external and internal design studio factors. Internal studio factors include students' fluency in English Language, types of class schedules, size of the classroom, availability of English text books, test results, learning facilities, homework, environment of the class, complexity of the course material, teachers' role in the class, technology used in the class and exams systems. The external studio factors include extracurricular activities, problems rising from the family, work and financial challenges, social and other problems. There is also another view that school based factors such as quality of lecturers, teaching class, studio spaces, accommodation, and library facilities particularly influence architecture students' performance [6]. Generally speaking, there is copious evidence in the literature indicating that students' performance can depend on learning facilities and their personal characteristics [3].

Benefits of good Interior Design in Architectural Design Studios

There is emerging consensus in the literature that designers need to understand how a physical environment affects their users in order to achieve a well-designed environment relating to their needs [16]. Basically, interior designs are important in any given space because they add aesthetic value to the space. A well- planned architectural design studio aids in the level of focus and concentration amongst students during and after lectures. According to [13], healthy and comfortable learning spaces are strong factors for positive learning outcomes, while poorly designed studios make the environment uncomfortable hereby causing unnecessary distractions in the studio due to discomfort. In fact, previous study has shown that temperature, heating and air quality, lighting and acoustics are strong components that hinder or enhance student performance [5].

Further, a well-designed interior of an architectural design studio allows for active participation amongst both students and faculties. Previous studies [5], [6], and [3], noted that environmental conditions in school facilities affect students' academic performance. Therefore, there is the general assumption that when students are academically active, their attitudes towards their academics tend to get affected positively resulting in outstanding performances among students. This informs studies of this nature that seeks to uncover how to use interior design to enhance students' academic performance in architectural design studio environment.

III. RESEARCH METHODS

The data presented in this paper were obtained from a research project to investigate the influence of interior design of architectural studios on student's performance in design tasks in three selected private universities in Ota, Ogun State, Nigeria. The research design was a survey involving the administration of questionnaires to the undergraduate and post graduate students of the selected universities. The survey was carried out on these three private universities because they are the only Architects Registration Council of Nigeria (ARCON) accredited private Universities in South West Nigeria that run architecture programmes. In determining the sample size for this research, a formula proposed by Azika (2004) cited by Oluwunmi (2014) was used. The formular is given as:

$n = N / [1+N(e)^{\cdots\cdots}$ …Equation 1

Where n=the sample size for the population; N=Sample frame; e = Marginal error. (The value for e is found in statistical tables which contain the area under the normal curve. e.g. e=1.96 for 95% level of confidence. The sample size obtained was 200 students in both the undergraduate and post graduate classes of the selected schools.

The data gathering instrument used was a structured questionnaire designed by the first author and the fieldwork for the data collection was conducted between December 2018 and March 2019. It had both closed and open-ended questions and was designed to gather data from both undergraduate and undergraduate students in the Departments of Architecture in three universities on several parameters including: 1) the personal characteristics of the students of Architecture in the selected private Universities 2) assessment of the interior designs of architectural studios and 3) performance of the students in the architectural design studios. The questionnaire was divided into four sections. The first section was used in gathering information on the social and economic characteristics of the respondents. The second helped in collecting the data on the interior design of the architectural design studios of the selected departments of architecture, and the third section was used to generate on the principles of interior design. The fourth section of the data gathering instrument was used to collect the data used to assess the influence of the interior design of architectural studios of the departments of architecture in the selected universities on students' performance in architectural design projects. The scale of measurement used in the design of the second to the fourth sections of the questionnaires was a 5- point Likert type scale. Specifically, the scale for the agreement that was utilized in this research ranges from very good, good, undecided, poor, very poor and strongly agree, agree, undecided, disagree and strongly disagree with the values ranging from 1 to 5 in each case, respectively. A total number of 200 questionnaires were administered by hand to randomly selected undergraduate and postgraduate students of architecture in the three universities. However, a total of 190 copies of the questionnaires representing around 95% of the administered questionnaire were retrieved as indicated by Table 1.

Table 1: Questionnaires retrieved from the respondents

Selected schools of architecture	No of questionnaires retrieved	Percentage of retrieved questionnaires
Covenant University	90	47.4%
Bells University	50	26.3%
Crescent University	50	26.3%
Total	190	100%

The data obtained from respondents were analyzed with the use of IBM SPSS Version 21. Based on the objectives of the study, the data were analyzed using descriptive statistics which involved the computation of frequencies, percentages and mean scores, standard deviations and ranking of the mean scores of the responses provided by the participants. Results of the analysis are presented using tables.

IV. RESULTS AND DISCUSSIONS

Personal Profiles of the Participants

Table II shows the analysis of the social and economic characteristics of the participants in the research.

Table II: Socio-economic characteristics of the respondents

Variables	Categories of users	n (%)
Gender	Male Female	103 (54.2) 87 (45.8)
Age of respondents	Below 16 years 17-20 years 21-25 years	23(12.6) 136 (71.6) 31(15.8)
Tribe	Igbo Hausa Yoruba Others	30 (15.8) 29 (15.3) 86 (45.3) 45 (23.7)
Level of Study	100 Level 200 Level 300 Level 400 Level	43 (22.6) 58 (30.5) 57 (30) 32 (16.8)

The results in Table II revealed that 45.8% of the respondents are female and 54.2% of the respondents are male with the majority of them being in the age bracket of 17-20 years, and of the Yoruba ethnic group. In addition, the results also show that majority of the participants are 200 level and 300 level students of architecture.

Interior Designs of Architectural design studios

Table III shows an assessment of the interior designs of the architectural design studios in the selected universities.

Table III: Assessment of Interior Design of Architectural Studios

Variable	School	Yes n (%)	NO n (%)
Studio code of conduct	Covenant University Bells University Crescent University	64 (71.1%) 33 (66%) 47 (94.%)	
Is the existence of a studio code of conduct the reason you work in the studio	Covenant University Bells University Crescent University	54 (60%) 28 (56%) 43 (86.%)	

The results from table III shows that in Covenant University, 64% of the respondents say there is a studio code of conduct, 33% of the respondents in Bells University say there is a studio code of conduct while 47% say there is a studio code of conduct in Crescent University. The results also revealed that 54% of the respondents in Covenant University believe they work in the studio because there is a studio code of conduct, while 28% of the respondents in Bells University and 43% in Crescent University also agree with this. Further, the results indicate that 56% of the respondents in Covenant University agree that they have adequate studio furniture in their respective studios, 31% of respondent in Bells University agree with this, while 41% of the respondents in Crescent University believe this to be also true.

Interior Design Features in Architectural Design Studios

Table IV provides descriptive statistics of students' ratings of the hierarchy of features in architectural design studios that enhance their performance in the three private universities studied. A close look at the results reveals that provision of studio spaces is the most important feature that enhances students' academic performance. This is followed by privacy within the studio spaces, noise insulation, rhythm and harmony within the studio, color of the studio space, spatial arrangement of furniture within the studio space and artificial lighting within the interior space. Again in the hierarchy of importance is the noise levels within the studio space, availability of plants within the studio space, natural lighting, presence of ramps, adequate ventilation of the studio space, stairs leading to the studio spaces, attitudinal disposition of the students, doors within the studio spaces, furniture, ceiling finishes, creative abilities of the students, window sizes, wall finishes and floor finishes.

Table IV: Features of Interior Design of Architectural Design Studios

Requirement	Features	No of Respondents	Mean	Std. Deviation	Rank
Studio Space	Satisfied with the amount of space	190	2.91	1.14	1st
Privacy	Adequate amount of privacy in the studio space	190	2.54	1.31	2nd
Noise protection	The studio is not too noisy	190	2.51	1.14	3rd
Rhythm and harmony	There is a Relative flow of rhythm and harmony in the studio	190	2.43	1.01	4th
Colour	The colour is aesthetically appealing	190	2.30	0.95	5th
Spatial arrangement	The arrangement of furniture in relation to the spaces are comfortable	190	2.29	1.04	6th
Artificial lighting	There is an adequate amount of artificial lighting in the studio	190	2.15	1.11	7th
Noise	Studio is noisy most times	190	2.05	1.03	8th
Plants	There is none	190	1.88	0.32	9th
Natural lighting	The amount of natural lighting entering the studio is adequate, less amount of glare in most cases.	190	1.88	0.92	10th
Ramps	There is no ramp used	190	1.83	0.37	11th
Ventilation	The amount of ventilation entering the studio is adequate	190	1.79	0.87	12th

Stairs	The size of the threads are big enough , the number of steps are adequate, finishes on the stairs are adequate, availability of handrails on the stairs, the slope of the stairs are not too steep.	190	1.72	0.45	13th
Attitudinal disposition	Students Comportment	190	1.54	0.50	14th
Doors	The doors used are wide enough, the finishes used are adequate	190	1.51	0.50	15th
Furniture	The amount of furniture provided are effective, most furniture used in the studios are not comfortable	190	1.33	0.47	16th
Ceiling	The finishes used for the ceiling are adequate	190	1.28	0.45	17th
Creativity	Creative Ability	190	1.26	0.44	18th
Windows	The window sizes are wide enough for lighting and ventilation, the amount of windows used are adequate	190	1.23	0.46	19th
Walls	The wall finishes are adequate	190	1.21	0.41	20th
Floors	The floor finishes are adequate.	190	1.21	0.41	21th

V. CONCLUSIONS AND RECOMMENDATIONS

The research generally was aimed at assessing the influence of interior design of architectural studios on student's performance in selected private universities in Ogun State Nigeria. It goes beyond the normal scope of interior design schemes like: the arrangement of furniture, colour specification of the interior space, fittings, and the elements of interior design. Basically, these interior design schemes, if not properly organized and oriented have a great influence on the attitude of students towards working in their studios which in turn can affect their performance. From further observations made from the selected architecture studios, it was observed that students are not certainly aware of the conduciveness and wellness of their studios hence more work is needed to be done on the general interior design to ascertain the wellness of the studios. The design studio being a sole environment where both theoretical and practical learning and work is carried out should be made comfortable for the users of the space. There is a fact that people tend to work better in places where they feel comfortable in.

Based on these findings, it is recommended that interior design in terms of privacy, protection from noise, ventilation, spatial arrangement, color, natural lighting, artificial lighting and floor finish of an architectural design studio have a strong influence on the student's performance in architectural design studios of the selected private universities. It is further recommended that other studies should be intensively carried out on other areas that can influence the performance of architectural students like other school based and socio-economic factors. Emphasis should be placed on providing a good workspace for students to carry out their design tasks and other routine assignments to ensure a good academic result. This implies that in the design of interior spaces of design studios, emphasis should be placed on the use of materials and space configurations that enhance students' visual, acoustic, spatial and thermal comfort and mental productivity, leading to improved academic performance.

AKNOWLEDGEMENT

The authors are grateful to covenant university for providing the funds, facilities and an enabling environment to carry out and publish this paper. the authors are also appreciative of researchers whose work were used and duly acknowledged in the study.

REFERENCES

1. Augustin, S., Frankel, N., & Coleman, C. (2009). *Place advantage: Applied psychology for interior architecture*. John Wiley & Sons
2. Barrett, P. S., Davies, F., Zhang, Y.,Barrett, L.(2015). The impact of classroom design on pupils'learning: Final results ofa holistic, multi-level analysis.
3. Ching, F. D., & Binggeli, C. (2005). Interior design illustrated . Hoboken.
4. Crandell, C. C., & Smaldino, J. J. (2000). Classroom acoustics for children withnormal hearing and with hearing impairment. *Language,speech and hearing services in schools*, *31*(4), 362-370.
5. Earthman, G. I., & Lemasters, L. K. (2011). The influence of school building conditions on students and teachers: A theory-based research program (1993-2011). *The ACEF Journal*, *1*(1), 15-36.
6. Fisher, T.R. (2001). Revising the discipline Of architecture. In A. Piotroski, & J. W. Robinson (Eds.),The discipline of architecture. MN: University of Minnesota Press.
7. Hasan, A., Baser, J. A., Razzaq, R. A., Puteh, S., &Ibrahim, N. (2017, September). The Influence Factors to Academic Performance of Architecture Students in Malaysia. In International Conference on Technology and Vocational Teachers (ICTVT 2017). Atlantis Press.
8. Haverinen-Shaughenessy, U. & Shaughnessy, R.J. (2015). Effects of classroom Ventilation Rate and Temperature on Students' Test Scores
9. Hill, H. C., Ball, D. L., & Schilling, S. G. (2008). Unpacking pedagogical content knowledge:Conceptualizing and measuring teachers' topic-specific knowledge of students. *Journal for research in mathematics education*, 372-400.
10. Ismail, A. S., & Rasdi, M. T. M. (2010). Mosque architecture and political agenda in twentieth-century Malaysia.
11. Jia, Y., & Kvan, T. (2004). Students' learning styles and their correlation withperformance in architecture design studio.
12. John, M., & Timothy, E.H. (2005). Illuminating the Classroom Environment.School Planning & Management
13. Littmann, W. (2000). Assault on the École: Student campaigns against the Beaux-Arts1925–1950. Journal of ArchitecturalEducation, 53(3), 159–166.
14. Monteiro, A. (2012). Lighting conditions inassembling electrical industry
15. Mushtaq, I., & Khan, S. N. (2012). Factors Affecting Studentsâ Academic Performance. Global journal of management and business research, 12(9).
16. National Council of Interior Deisgn Qualifications (NCIDQ). 2004. "Definition of Interior design". http: //www.ncidq.org/About us/About Interior design/Definition of Interior design.aspx. Accessed Ma 20, 2014.

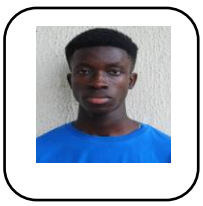
17. Oluwatayo, A.A, Aderonmu, P.A & Aduwo, E. B. (2015). Architecture Students' Perceptions of Their Learning Environment and Their Academic Performance. Learning Environ Res (2015) 18:129–142 DOI 10.1007/s10984-015-9172-7
18. One workplace. (1999). Seeing the Difference, The Importance of Quaity Light in the Workplace. Workplace Issues.
19. Opoko, P. A., Alagbe, O. A., Aderonmu, P. A & Ezema, I.C. (2014) Entry Qualifications and Academic Performance of Architecture Students in Buildi Structures. In: Proceedings of EDULEARN14Conference, 7th-9th July 2014, Barcelona, Spain. 1637-1641.
20. Runco, M. A. (2004). Everyone has creative potential.
21. Samani, S. A., & Samani, S. A. (2012). The impact of indoor lighting on students' learning performance in learning environments:A knowledge internalization perspective. *International Journal of Businessand Social Science*, *3*(24).
22. Shahrazad Hadad and Oana (Drumea) Găucă, (2014), Social impact measurement in social entrepreneurial organizations
23. Wiles, J.W. (1978). Reassessing personal space in classroom. The southern journal of Educational Research, 12, (1), 111-11

AUTHORS PROFILE

Arc Emokpae M.Erebor is an architect and teaches at Covenant University, Ota Nigeria. His research interests are in the areas of energy efficiency in office buildings, sustainability and green building design.

Professor Eziyi O. Ibem is an architect and teaches Architecture at the University of Nigeria, Enugu Campus, Enugu Nigeria His research interests are in the areas of sustainable housing and infrastructure development strategies, post-occupancy evaluation and environment behaviour.

Dr Isidore C.Ezema is an architect and teaches architecture at covenant university, ota, nigeria. his research interests are in life cycle analysis, energy conservation in buildings and sustainable architecture



Ajagba P.Benson is a Masters Student in the Department of Architecture at Covenant University Ota Ogun State. His research interests are Sustainability and Bio-Climatic Architecture