



STUDENTS SATISFACTION OF INDOOR LEARNING ENVIRONMENT OF AHMADU BELLO UNIVERSITY, ZARIA: A Case Study of Department of Architecture

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Abstract

Lighting, thermal comfort, indoor air quality and workspace environment being the major factors associated to students' satisfaction of indoor learning environment, the level of control of these factors affect students satisfaction and is a challenge for the students in using their departments for academic purpose efficiently. However, analysis has been done on different spaces, but has not thoroughly been done on the department of Architecture. Therefore, this research is aimed at studying student's satisfaction of indoor learning environment of Department of Architecture, Ahmadu Bello University Zaria. In the course of this research, 60 semi structured questionnaires were issued to the students of Department of Architecture through a purposive sampling technique; 57 were returned and 2 were invalid giving 55 useful (95% response rate); descriptive statistics was used in analyzing the data from the questionnaires. The finding showed that the students' satisfaction has been achieved through workspace, indoor air quality and thermal comfort while that of artificial light has not been properly met. Conclusively, the school management is encouraged to provide quality artificial light and enhance thermal comfort in the Department of Architecture and encourage manufacturers to improve the efficiency of architectural drawing tables and artificial light especially the ones meant for students of Architecture. The school management should always replace back the damaged light bulbs immediately and provide quality light bulbs to suit various functions to increase students' level of satisfaction for quality academic output.

Keywords: Artificial lighting, Indoor learning environment, Students' satisfaction, Thermal comfort, Workspace environment

INTRODUCTION

Education is the infrastructure of any social, economic, political, and cultural development in any society. Learning environment is built to satisfy the occupants of the building in



various ways in order to ensure its functionality. It is supposed to provide condition where students feel that they are comfortable and safe in all manners for the students to be comfortable in order to be resourceful, sociable, productive and able to share knowledge. It has been observed that student satisfaction is considered an important factor in measuring the quality of learning approach and a key factor in the success of learning programs (Minh-Quang, 2015).

Nova, Arpinus, and Suharmonc, (2017) explain that learning is a form of deposit or mental change in a person expressed in new ways of behaving based on experience and training, User's satisfaction is the feeling of pleasure or disappointment resulting from comparing the perceived performance of buildings with user expectations. Dawit, Getachew, and Ashenafi (2017) suggested that building satisfaction is an excellent tool for assessing the effects of educational spaces on students. The learning environment, which includes the classroom, school location, school facility, school climate and technology, and so on, is a variable that affects students' comfort. Noise, inappropriate temperature, insufficient light, overcrowded classes, work environment and inappropriate classroom layout all make up factors that could be confusing variables distracting students in class. Ghasemi, M. A. & Mirdad, F (2015) demonstrate that design characteristics such as poor acoustics, poor ventilation, insufficient lighting, and chronic noise exposure undermine learning. Ibrahim (2016) states that adverse environmental conditions in schools such as high levels of noise, inappropriate temperatures, poor lighting and insufficient equipment negatively affect students' performance and can lead to some health problems.

Universities in the modern world are expected to seek and cultivate new knowledge, provide the right kind of leadership and strive to promote equality and social justice which can be achieved if the students are comfortable with their environment (Dawit et al., 2017). Iwuagwu, Don, and Ojehenkele (2016) explain that environments play major roles in the life of every individual whether a student, teacher, employer or employee. Institutional building project's success directly depends upon the user satisfaction level in that users will require indoor environmental conditions that can successfully support computer intensive activities, as well as paper-based tasks. Many studies have also analyzed the elements of comfortable environments to improve educational environments under the expectation that comfortable learning classrooms would enhance the performance of the students studying in those environments (Tamaraukuro & Japo, 2016).

Analysis indicates that interior architecture and internal features of learning spaces can help students gain satisfaction, focus their attention on studying or prevent them from giving full attention to learning. Creating the optimal learning and teaching spaces are an art that improves student performance and motivation while effective educational spaces allow students to work collaboratively with each other and to improve their cognitive functioning.



Concept of Post Occupancy Evaluation of buildings and their environments has an effective role in the building process in order to assess the efficiency of designed environments. The objective of a post occupancy evaluation is to identify any differences between the original design intent and the actual facility delivered, allowing for changes to be made to reduce this difference.

However, one of the ways to provide for the basic human functions is to design and construct adequate and appropriate learning facilities that satisfy users' physical, emotional and psychological as well as religious belief. According to Ezeala and Moleki (2017), students' satisfaction is an important factor in the strategic management of higher educational institutions. School planners should also create learning environments that motivate students and support learning and teaching. In fact, physical environments should not be only functional, they should provide comfortable spaces such as sound architecture and unique design. Research has consistently shown that vision dominates human experience, and that appearances, aesthetics or the invisible mental image takes first priority in human's experiences of places (Wolfgang, Preiser, & Jack., 2008). Hence the school environment remains an important area that should be studied and well managed to enhance students' academic performance

Indoor learning environment success directly depend upon the user satisfaction level but sometimes these standard & specifications do not confirm to the changing needs and expectations of users. Building users or employees wish to work in an environment that is conducive to their health and well-being. When these conditions are absent in a work environment, the morale, productivity and performance of employees can deteriorate

As much as higher education around the world is intended to help students attain intellectual competence, brighten personal character, aid in forming patterns of behaviour, thought, and imagination. "Different occupants, variation of needs, changes of use, maintenance, and technological advancements are among the issues that have been spotted to mainly affect buildings" (Petros, 2016). Architects frequently fail to learn straightforward lessons from completed projects and end up repeating mistakes that could easily be avoided "The construction industry is frequently cited as being inefficient, of poor quality and unable to improve over time" (Hay, Samuel, Watson, & Bradbury, 2017).

With respect to the aforementioned problems experienced by users of the learning environment, low quality buildings and wrecked environments are unfriendly to the general wellbeing and life of people, there is therefore the need to evaluate the perception of the users of Department of Architecture. The need for the study arose so as to study the comfort of student and even the school management of Ahmadu Bello University, Zaria.



Aim and Objectives

The study seeks to evaluate student satisfaction of the Department of Architecture, Ahmadu Bello University, Zaria as case study, which will be achieved through the following objectives;

1. To study the concept and theories of post occupancy evaluation of learning environment.
2. To identify the factors that determines the level of student satisfaction in learning environment.
3. To determine the level of student satisfaction in the Department of Architecture, Ahmadu Bello University, Zaria.

RESEARCH METHODOLOGY

The Department of Architecture A.B.U Zaria consist of two sections which are the post graduate section and the undergraduate section which consist of four (4) levels with over four hundred (400) students, staff offices, conference hall, library, studios, concourse, CAD laboratory and conveniences. There are three studios, the MSc studio, 200 level studio and 400 level studios which can be accessed through a central staircase. The building is surrounded with large windows and shading devices especially at the approach. The interior doors made of timber while that of studio with steel with vitrified tiles floor finish.

The target population encompasses the 84 students of the 400 level in the Department of Architecture, 2016/2017 Session. The main reason for choosing the 400 level student is because they have had the highest level of experience in using the spaces at the undergraduate level in Zaria School of Architecture. Sixty respondents were selected using simple random sampling techniques from the target population.

Semi-structured questionnaire was used as data collection instrument. The questionnaire was designed to find both bio-data; data of students' duration of stay, gender, age in order to enlighten the researcher with the background of the respondents, followed by the second section, which provided information about building elements such as windows, roofs, floors walls, demarcations and shading devices. The final section asked the level of satisfaction constructed from the factors derived from the literature review; the various factors were enumerated for the respondents to indicate the level to which they feel satisfaction in the Department of Architecture, A.B.U Zaria. The factors include; lighting, thermal comfort, indoor air quality, work environment and indoor environmental quality. A 5 point Likert scale ranging from 1 'strongly disagreed', 2 'disagreed', 3 'moderate', 4 'agreed' and 5 'strongly agreed' for section 2 was employed. This greatly helped in obtaining the respondents' views of satisfaction.

A total number of 60 questionnaires were administered on the respondents, 57 were returned and 2 were invalid leaving 55 useful. Data from the structured questionnaires were



translated into numeric codes by the researchers, and data capture were analyzed using descriptive statistics.

DATA PRESENTATION AND DISCUSSION

This section presents the results of analysis of the data collected from various respondents. The results are presented in bar charts, frequencies and percentages.

Students' Demographic Data

From the sample size, a total number of 60 questionnaires were administered but only 55 were found useful and analyzed. 3.64% (2) respondents fall within the age range of 15-19years, 54.55% (30) responded fall within the age range of 20-24years, 34.55% (19) fall within the age range of 25-30years, and 7.27% (4) fall within the age range of 30 and above. The age range with highest percentage is 20-24years followed by 25-30years then 30and above years and 15-19. The result is shown in Figure 1.

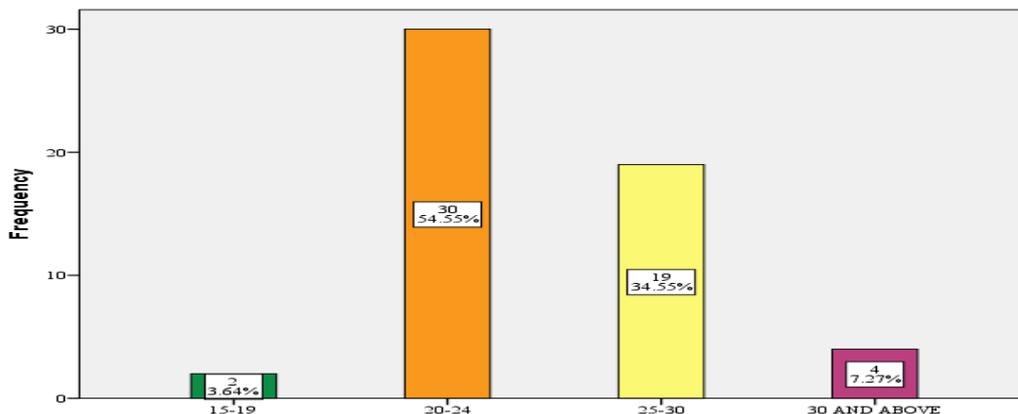


Figure 1: Age Range Respondents

From Figure 2, 3.70% (2) respondents spent 2years in the Department of Architecture, 5.56% (3) respondents spent 3years, and 90.74% (49) spent 4years. The duration with highest percentage goes to 4years, followed by 3years and then 2years. This indicates that most of the respondents have spent 4years in department of Architecture.

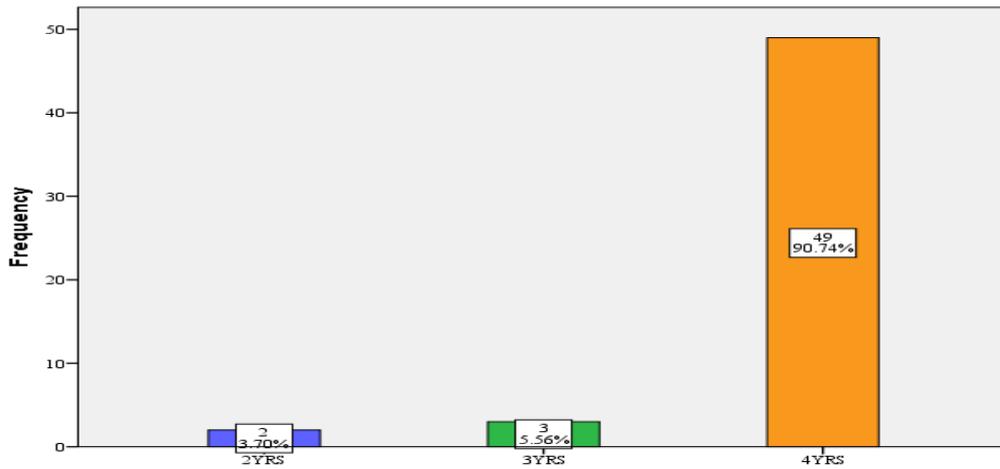


Figure 2: Respondents' Duration of stay in the Department of Architecture.

From Figure 3, 12.73% (7) respondents stay mostly in the classrooms, 74.55% (41) respondents stay mostly in studio, 10.91% (6) respondents stay mostly in the library and 1.82% (1) respondents stay mostly in CAD laboratory. The space with the highest number of stay is studio followed by classes, followed by library and then Cad lab. This indicates that students stay mostly in the studio and hardly in Cad lab.

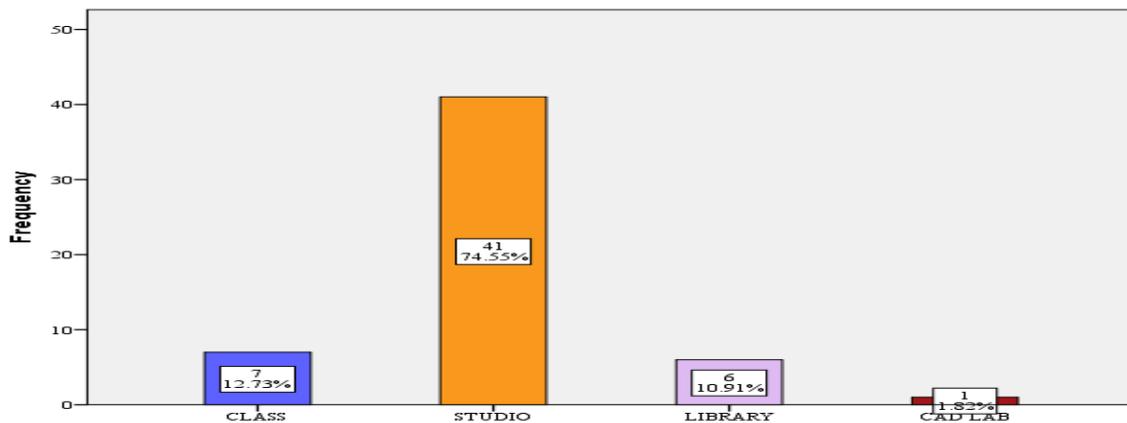


Figure 3: Spaces Respondents stay most in the Department of Architecture.

From Figure 4, 61.82% (34) respondents enjoy spending much time in the department while 38.18% (21) respondents do not enjoy spending much time in the department. This shows that much of the respondents enjoy staying in the department of Architecture.

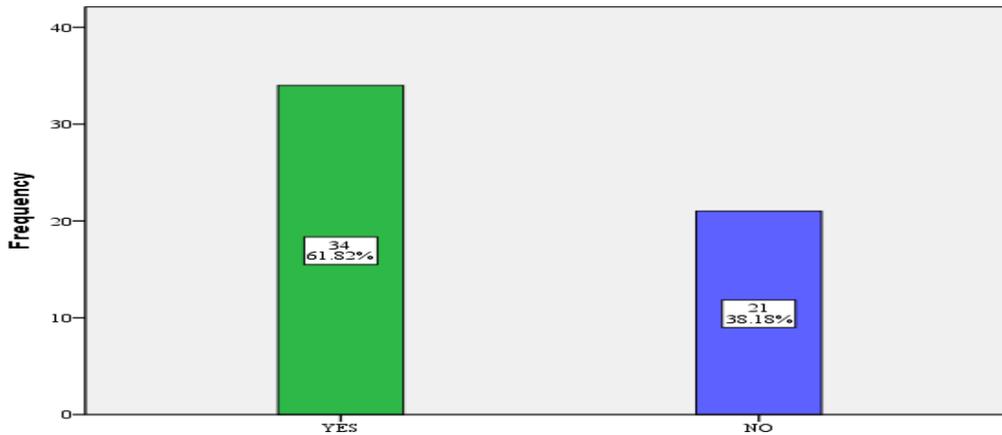


Figure 4: If Students Enjoy Spending much Time in the Department.

Students' Perception of Building Elements.

Figure 5 shows the respondent mean score for windows is 3.6545, respondents has the mean score for roof to be 3.6545, respondent have mean score of 3.545 for walls, respondent has the mean score for floors to be 3.5091, followed by demarcations with mean score 3.6727, and then shading device with mean score 3.8909. This indicates that shading device is much appreciated for comfort as building element.

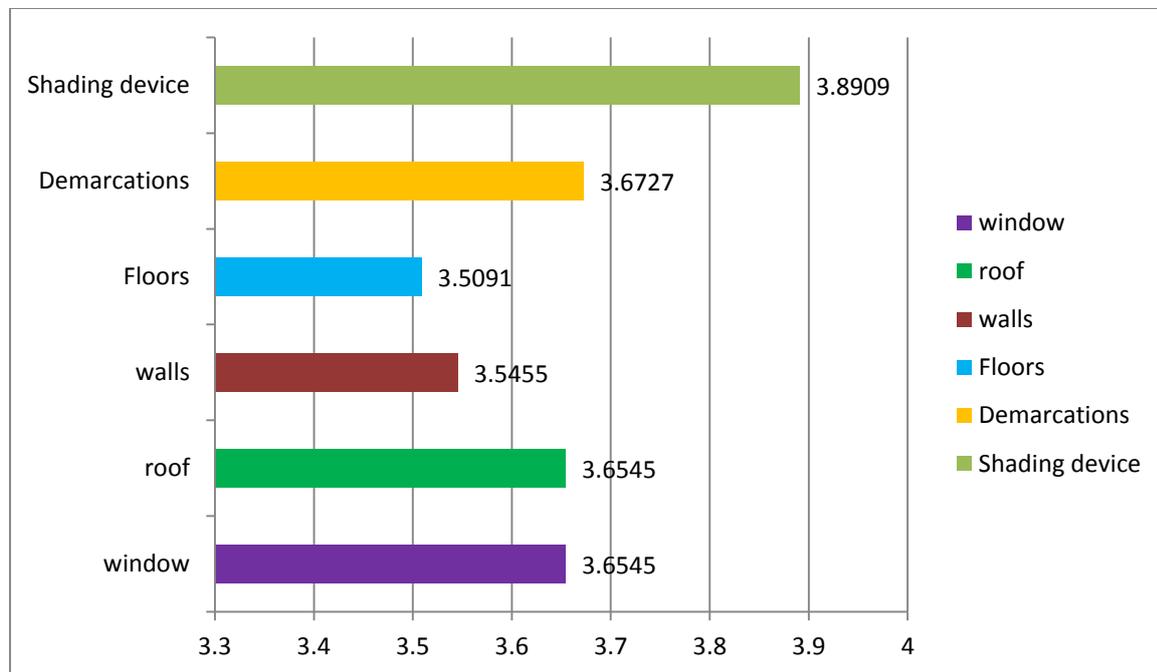


Figure 5: Students' Perception of Building Elements in the Department of Architecture.



Student's Perception of Factors of Satisfaction in the Department of Architecture

Figure 6 show that the respondents response to "natural light is adequate in studios" has mean of 3.1455, "light adequately reaches working table" has mean of 2.8727, followed by "artificial light is always available" with mean of 2.9818 and then "quality of artificial light is good" with mean of 3.0000. This indicates that natural light is adequate in studios but light does not adequately reach working tables.

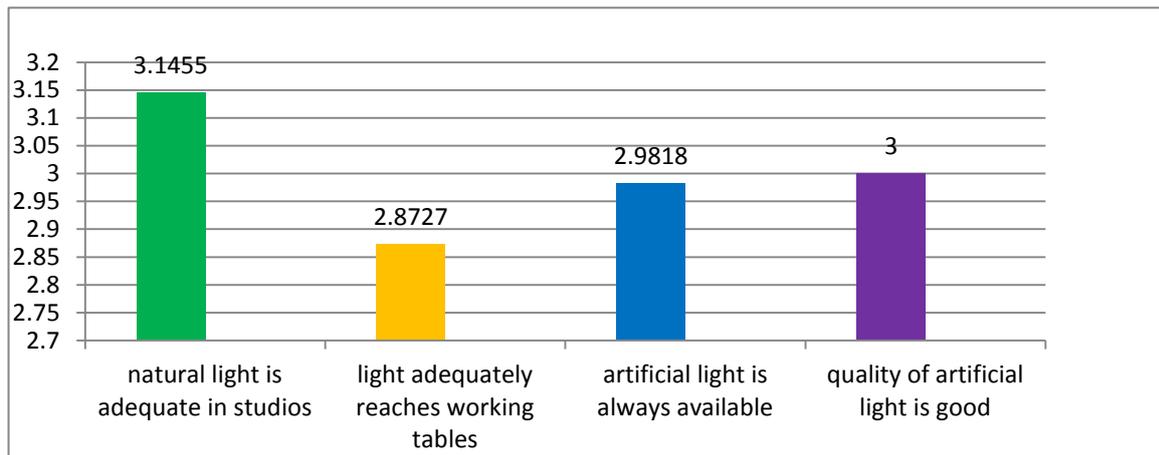


Figure 6: Students' Perception of lighting in the Department of Architecture.

It is clear from figure 7 that "class is comfortable when electricity is not artificial ventilation" has mean of 2.4364, "indoor air temperature is normal has mean of 2.9455, followed by "studio is hot during dry season" with mean of 2.7455 and then "there is good thermal control" with mean of 3.1818. This indicates that there is good thermal control and classes are not comfortable when there is no artificial ventilation.

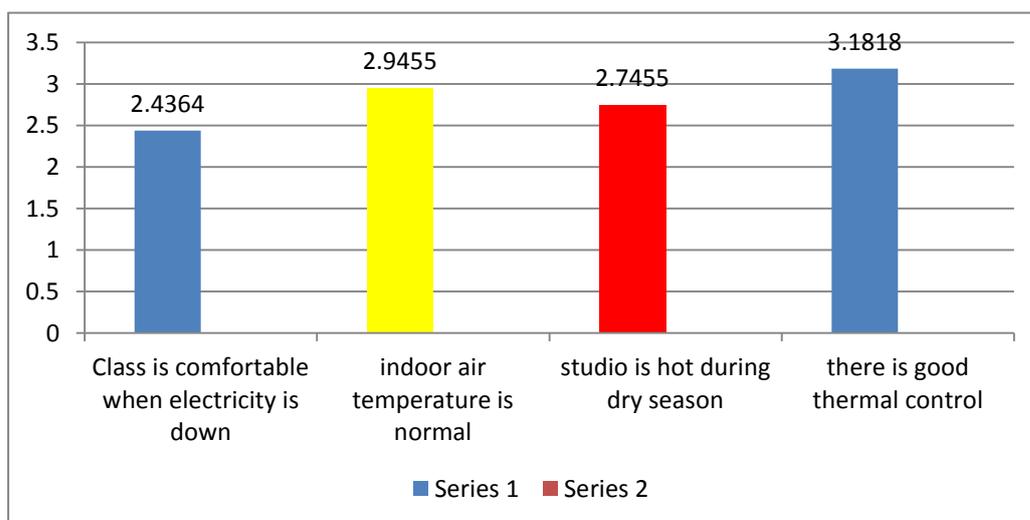


Figure 7: Students' Perception of Thermal Comfort in the Department of Architecture.



Figure 8 shows that “foul smell from toilets disturbs student” has mean of 2.0364, “indoor air is too bad for health” has mean of 2.2545, followed by “indoor air causes uncomfourt” with mean of 2.4364, and then “there is good control of indoor air” with mean of 3.0926. This indicates that there is good control of indoor air and foul smell from toilets does not disturb students.

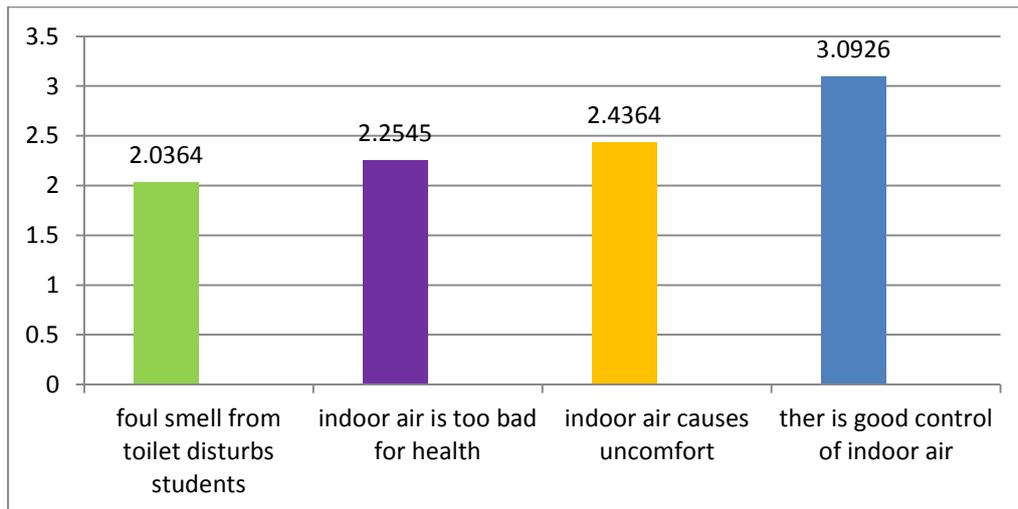


Figure 8: Student perception of indoor air quality in department of Architecture.

Figure 9 shows that “studio is sufficient for all student” has mean of 2.5818, followed by “classes are always available for reading” with mean of 3.2000, and then “studio tables are faulty” with mean of 3.1273. This indicates that classes are always available for reading and studios are less sufficient for all students in department of Architecture.

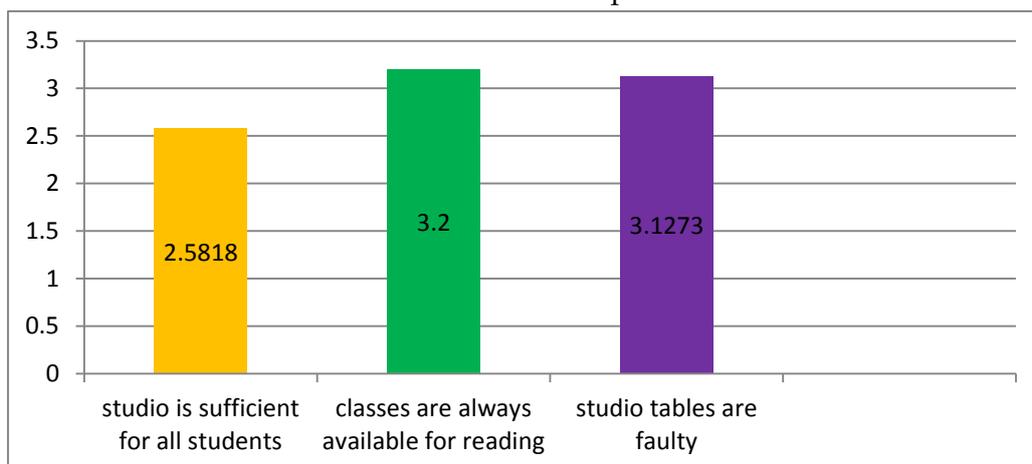


Figure 9: student perception of work environment in department of architecture.



Figure10 shows that lighting has the highest mean followed by thermal comfort, followed by indoor air quality and work environment. These indicate that students are more satisfied with work environment followed by indoor air quality, followed by thermal comfort and lighting.

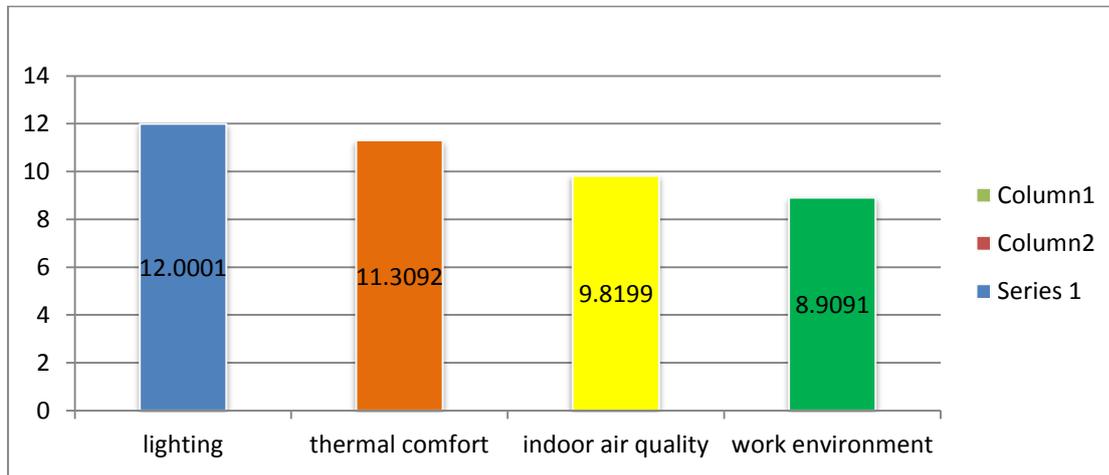


Figure 10: level of student satisfaction in department of Architecture

Discussion on the Findings

The findings from this research revealed that most of the respondents in this study are final year students who are basically the target for the study because of their period of experience in Department of Architecture. Also the study shows that most of the respondents are within the age range of 20-24 years who are at their active age and are able to tell their levels of satisfaction for indoor spaces of the study area. The study reveals that most of the students spend most of their time in the studios to carry out academic tasks because much of the tasks are studio based. The study also reveals that most of the student like to spent much of their time in the Department due to its level of comfort.

The study also shows that artificial lighting is inadequate in studios and corridors. Natural light aid students' comfort in studios as artificial light is not constant and respondents reveal that artificial lighting does not adequately reach working tables in studio which reduces students' productivity and performance which is in conformity with the findings of Jamshed (2016).

Thermal control as one of the major factors of indoor environment satisfaction is significantly controlled in the department of architecture as the respondents reveal because indoor air temperature is normal and not extreme due to presence of trees and this could be why majority of the students enjoy spending time in the department. This is similar to Mariantonietta (2017) findings.



The study also reveals that the indoor air quality is well controlled as it does not affect students' health and foul smell does not disturb students, the location of conveniences and proper mechanical services have been dealt with. This shows that respondents are satisfied with indoor air quality which has been well taken care of in the Department of architecture. The study respondents reveal that classes in the Department of Architecture are always available for reading and studios are sufficient for students to carry out studio based tasks due to number of students compared to number of working tables which aid students' interaction as stated by Modaberei, (2012). Also the study shows that most of few studio tables are faulty as their surfaces are rough.

However from the respondents, the study generally reveals that students are more satisfied with workspace followed by indoor air quality, followed by thermal comfort and then lighting.

CONCLUSION AND RECOMMENDATIONS

In conclusion, it has been revealed from these findings that the majorities of the students in the Department of Architecture are satisfied with most workspace, thermal comfort and indoor air quality and least satisfied with artificial lighting because light inadequately reach working tables and corridors. This lack of satisfaction of certain factors may lead to reduced student output.

From the results of the study, artificial light should be given emphasis in order to adequately reach working tables to enhance student satisfaction and aid student productivity. Also working tables in studios should be repaired and maintained for student of the Department to carry out their tasks efficiently.

The school management should always replace the damaged light bulbs immediately with good quality light bulbs to suit various functions to increase students' level of satisfaction. School management should also give emphasis on thermal comfort and work environment such as drawing tables to aid student productivity.



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