IOSR Journal of Environmental Science, Toxicology and Food Technology (IOSR-JESTFT)
e-ISSN: 2319-2402,p- ISSN: 2319-2399.Volume 10, Issue 12 Ver. IV (Dec. 2016), PP 65-69
www.iosrjournals.org

Post Occupancy Evaluation of New College of Environmental Studies Buildings at Gesse Campus, Waziri Umaru Federal Polytechnic, Birnin Kebbi

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Abstract: *Post occupancy evaluation is fast becoming a tool used by experts to diagnose buildings and facilities for the purpose of obtaining information vital to the management of the building and the design of new and related buildings. It is against this background that this post occupancy evaluation was carried out on the new College of Environmental Studies of Waziri Umaru Federal Polytechnic, Birnin Kebbi. The study sought to know user satisfaction with the space organization, design, facilities available, and the maintenance of the buildings. To achieve this, structured questionnaires were administered to academic staff and students in the departments in this college. Observation schedules and personal interviews were also conducted. Data obtained were analysed and showed that the buildings were poorly maintained and fell short of meeting the needs of the students in the area of facilities and services provided even though the designs were judged adequate.*
Keywords: *buildings, facilities, management, post-occupancy, services,*

I. Introduction

Modern organisational environment is characterised by rapid and constant changes. As the environment changes, so too do the demands which they place on building facilities [1]. This implies that organisations/institutions must improve in the provision, management and performance of their building infrastructure on a continuous basis. To meet this challenge, many institutions seek a greater involvement in the design and building delivery processes. This is to ensure that building performance requirements are fully understood by the design and construction teams [2]. A building must do what it was designed to do - not just provide shelter but also be an environment where people can live, work and achieve**.** Recent thinking demands that buildings are constructed to fulfil specific needs [3]. Like any other living species, humans are organisms adjusting to a dynamic, ever-changing environment, and the interactive nature of relationships between people and their surrounding should be considered in design. In the same vein, [4] opined that almost all users treat buildings as a means to an end and are not really interested in design or management matters. He also stated that they want to carry out tasks and activities as easily and effectively as possible with the least inconvenience to themselves. [5] defined users simply as the people who come into the building on a daily basis and carry out more or less the same types of activities while they are there.

Assumptions made by designers dictate the post occupancy state, but are rarely re-examined for accuracy and applicability in practice [6]. Even though Post Occupancy Evaluations (POEs) provide numerous benefits, the uncertainty and difficulties in the selection of indicators and feedback techniques have slowed their adoption [7][8]. The construction industry fragmentation also hinders POE adoption [9][10][11]. Another obstacle to POEs is that a 'one-size fits all POE' does not exist; therefore POEs should be tailored to specific building applications [12],[13],[10],[11], [14].

According to [15] education depends on students being supported, not frustrated, by buildings and equipment. As much as higher education around the world is intended to help students attain intellectual competence, enliven personal character, and aid in forming patterns of behaviour, thought, and imagination, campus housing as an integral component of the university plays a major role in promoting these objectives [16].

The post occupancy evaluation (POE) is a performance assessment of buildings under operation conditions that can help property owners and managers better understand how well a building is working and how its performance relates to the original design intents, how it compares to similar buildings or established benchmarks and how a building can be improved.

1.1 Post Occupancy Evaluation

Post occupancy evaluation is essentially a feedback about how buildings perform and how they interact with their users, in other words it can be said to be a method for data gathering on facilities performance. It is useful for analysing data and making recommendations for facilities improvements. The application of performance evaluation information to the building delivery process assist in closing the information loop in facilities management [17]. This is particularly useful when the evaluation results are fed into data bases focusing on building performance from the perspective of the user. The diagnosis obtained from a POE according to [18] will serve as feedback for managing the quality of the construction process, as well as the use, management and maintenance of built environments, especially regarding initial planning, programming, and design, and in the maintenance programs of the environments when in use.

Post Occupancy Evaluation (POE) has been an active research area for many disciplines. As a result of this, different interpretations of the topic have been provided by researchers. One of the most cited definition was provided by [19] Post-occupancy evaluation (POE) is the process of evaluating buildings in a systematic and rigorous manner after they have been built and occupied for some time, on the other hand, POE can be said to be an appraisal of the degree to which a designed setting satisfies and supports explicit and implicitly human needs and values of those for whom a building is designed. To this effect, this study aims at carrying out a post occupancy evaluation of the new college of environmental studies, Gesse campus of Waziri Umaru federal polytechnic Birnin Kebbi, Nigeria, with a view to ascertaining the level of satisfaction by its users.

II. Research Methodology

A descriptive survey research method was adopted for this study and both quantitative and qualitative data were generated. The study population are the new College of Environmental Studies buildings on the Gesse campus of Waziri Umaru Federal Polytechnic Birnin Kebbi, Nigeria. It comprises the Departments of Architectural Technology, Urban and Regional Planning, Quantity Surveying and Estate Management and Valuation. Questionnaires were administered to academic staff and students in all four departments. The questionnaires were close ended and elicited primary data. Administration of the questionnaires was randomly done except that students enrolled for evening programme in the college were exempted (Department of Estate Management and Valuation alone runs evening programme). Observation schedules and interviews were also employed in data gathering. Questions in the questionnaire included inquiries on the facilities available in the departments, adequacy of water supply, availability of alternative power supply and availability and adequacy of fire-fighting installations. In the data presentation and analysis, descriptive statistics was employed. Information elicited by the use of questionnaires were grouped into 6 categories namely:

i. Assessment of space performance and user's experience. Here enquiries were made about the capacity of the classroom, seating arrangement, orientation of the classroom/studio, position of white board/projector screen etc. A 5-point Likert scale was used to elicit response with 1 corresponding to poor; 2, fair; 3, adequate; 4, good and 5, excellent.
ii. Assessment of accessibility and circulation. Enquiries here were about location of staircases, ease of accessibility for persons with disability, location of lobbies etc. Again a 5-point Likert scale was used to elicit response with 1 corresponding to poor; 2, fair; 3, adequate; 4, good and 5, excellent.
iii. Assessment of facilities and services. Enquiries here were about the effectiveness and adequacy of water supply, wireless internet facility, fire extinguishers, vehicle parking facilities etc. A 5-point Likert scale was also used here to elicit response with 1 corresponding to poor; 2, fair; 3, adequate; 4, good and 5, excellent.
iv. Performance of the building envelope. To evaluate users' assessment of the performance of the building envelope, information elicited was elicited on the adequacy of natural lighting, natural ventilation and weather tightness of the building envelope. In the Likert scale used, respondents were required to agree or disagree with the effectiveness of the building envelope. Therefore, 1 corresponded to strongly disagree; 2, somewhat disagree; 3, neutral; 4, somewhat agree and 5, strongly agree.
v. Performance of the finishes. The respondents here were required to indicate the level of their satisfaction with the colour of walls, ceiling and furniture and also show how safe they find the flooring in different parts of the building. They were required to agree or disagree with the comfort and safety on a 5-point Likert scale where 1 corresponded to strongly disagree; 2, somewhat disagree; 3, neutral; 4, somewhat agree and 5, strongly agree.
vi. Cleaning and Maintenance. Information was also sought on how regularly offices and classrooms were swept and promptly damaged fittings were replaced or repaired. In this column of the questionnaire, respondents were required to agree or disagree to the regularity of cleaning and promptness of response to maintenance calls on a 5-point Likert scale where 1 corresponded to strongly disagree; 2, somewhat disagree; 3, neutral; 4, somewhat agree and 5, strongly agree.

III. Data Presentation And Discussion Of Findings

The college facility under study comprises 4 departments with varying number of students enrolled for regular academic programmes and incidentally equal number of academic staff as presented in Table 1.

Table 1: Departments in the college with number of academic staff and regular students enrolled for National Diploma and Higher National Diploma programmes

S/N	Department	No. Academic Staff	No. of Regular Students
1	Architectural Technology	11	141
2	Estate Management and Valuation	11	230
3	Quantity Surveying	11	94
4	Urban and Regional Planning	11	104

The study found from responses of both staff and students that users of the Department of Architectural Technology building indicated the most satisfaction with the space performance while users of the building housing the Department of Urban and Regional Planning indicated the least satisfaction though the scores are above the median for both students and staff as represented by Fig. 1. Data gathered also indicated that students of Architectural Technology department were the only students in the study more impressed with the space performance of their building than their teachers.

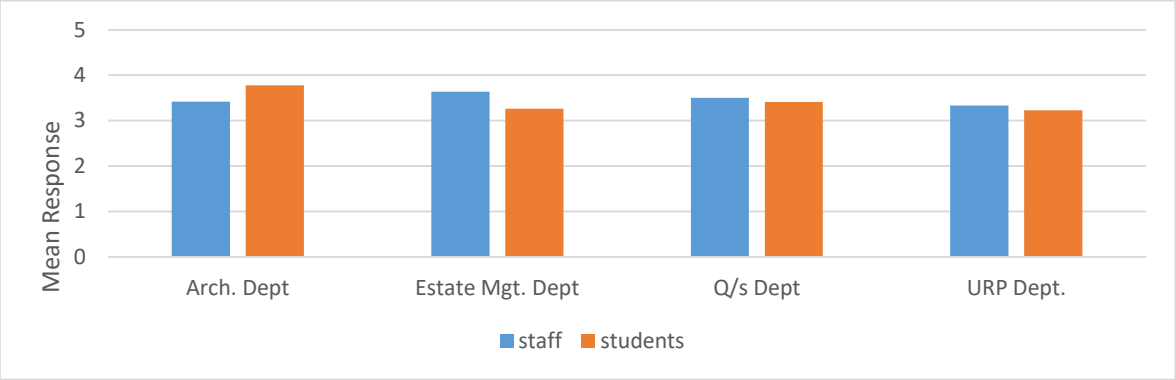

Figure 1: Assessment of space performance and user experience.

On accessibility and circulation within the buildings, it was discovered that Estate management and Valuation students and staff were the most satisfied while quantity surveying students and staff differed considerably in their assessment of these functions. This is illustrated in Fig. 2.

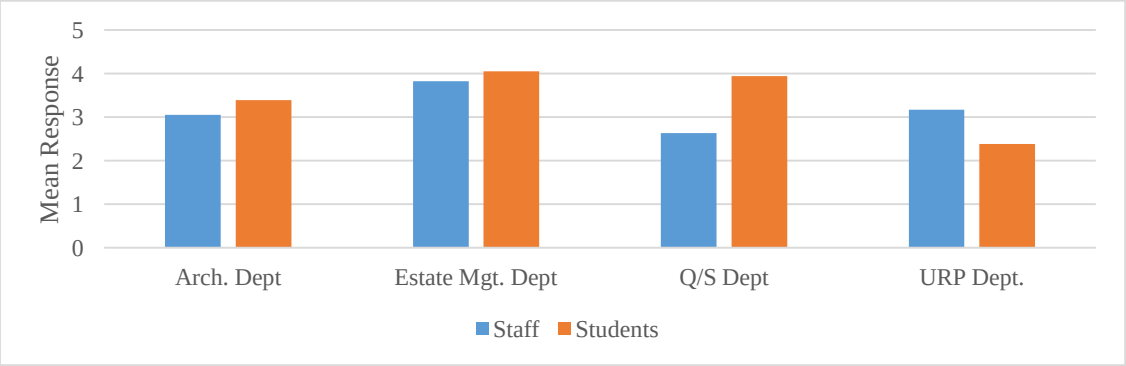

Figure 2: Assessment of accessibility and circulation.

Another observation is that staff are very impressed with facilities and services at their disposal in all departments except the department of Estate management and Valuation. Contrariwise, all the students are not satisfied with the facilities and services available to them. Fig. 3 illustrates this.

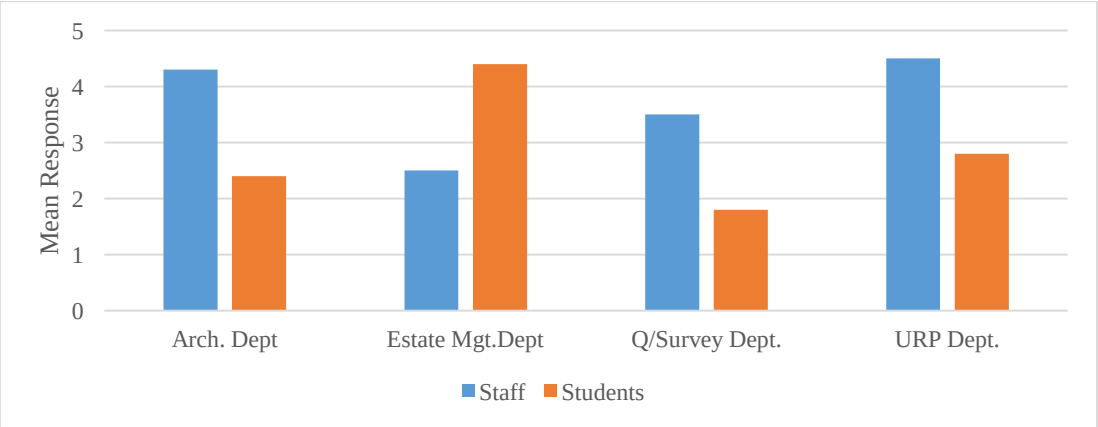

Figure 3: Assessment of facilities and services.

All staff and students submit that the building envelope does keep out the weather adequately as shown in Fig. 4.

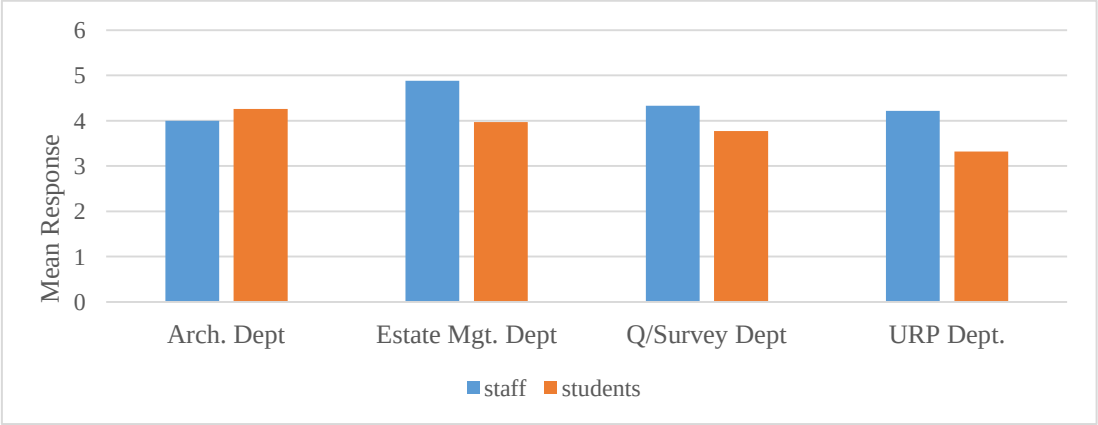

Figure 4: Performance of the building envelope.

The study showed general dissatisfaction with the finishing of these facilities as shown in Fig. 5.

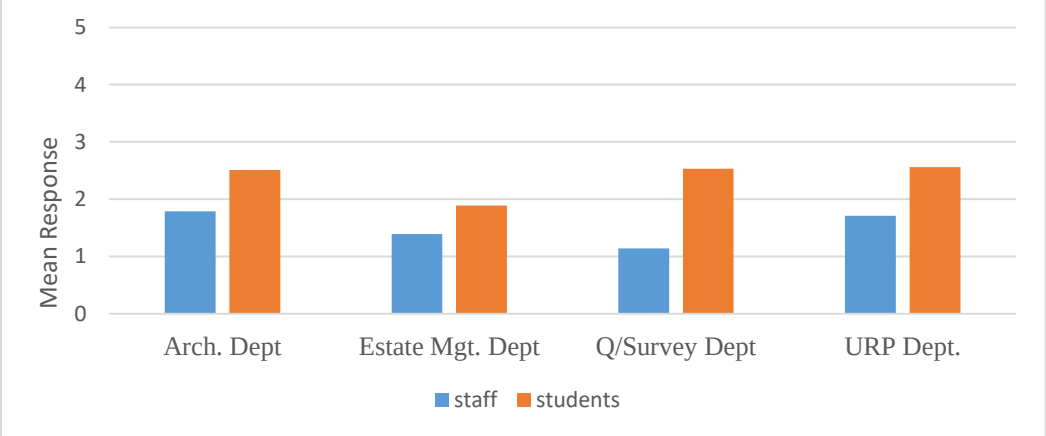

Figure 5: Performance of the finishes.

The most dissatisfaction, the study found, is with the cleaning and maintenance of all the buildings studied. Every department reported a less than median score as shown in Fig. 6.

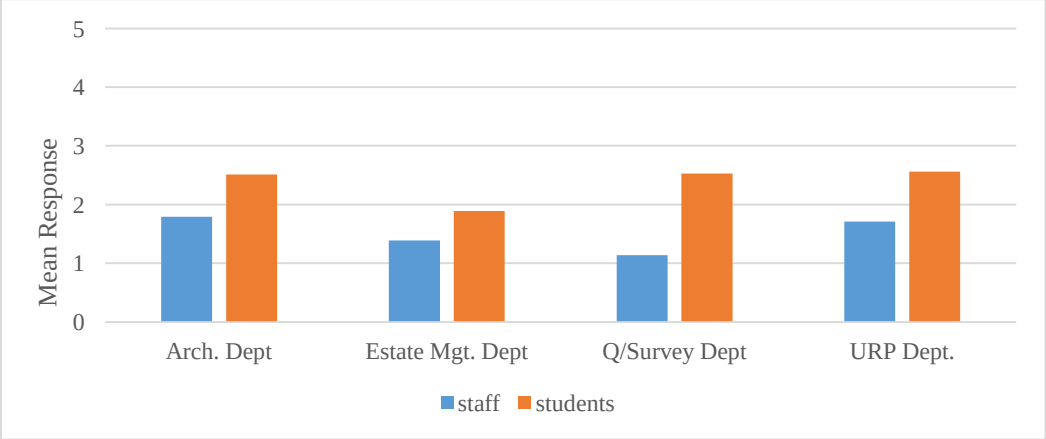

Figure 6: assessment of cleaning and maintenance of the buildings

IV. Conclusion

The study concludes that the building envelope indeed for all 4 buildings are adequate in the sense of keeping out the weather and providing for daylighting and natural ventilation. Also adequate are facilities and services for academic staff.

However, the services and facilities for students' use are inadequate or ineffective. There is the need to make the college more student-friendly by ensuring the provision of facilities and services required to make the academic climate conducive for learning. These include constant power supply, efficient wireless internet service, constant portable water supply and a safe haven for their bicycles and motorcycles.

Furthermore, the study submits that there is a general lack of a maintenance culture. Neither the buildings studied nor their immediate environment are regularly cleaned. This puts the building at the risk of accelerated decay and exposes the buildings to infestation by rodents and reptiles, thereby endangering the users of the buildings.

References

[1]. S.D. Green, and G.W. Moss, Value Management and Post-Occupancy Evaluation: Closing the Loop Facilities. 16 (1/2), 2000, 34-34. (1)
[2]. C. O. Kevin and Y. A. Charles, Analysis of Building Performance Evaluation and Value Management as Tools in Building Facilities Management, *Civil and Environmental Research*. 3(1), 2013, 1-7. (2)
[3]. W. Preiser and J. Vischer, Assessing Building Performance. Oxford, United Kingdom: *Elsevier*, 2005. (3)
[4]. A. Leaman,User Needs and Expectations. 1-13. Blackwell Publishing.. 2002 Retrieved April20,2013,from http://www.ri.salford.ac.uk/peterbarrett/resources/uploads/File/UserNeedsAndExpectations- AL.pdf (4)
[5]. J. C. Vischer, Towards a User-Centered Theory of the Built Environment. *Building Research Institute* , 231-240, 2008.(5)
[6]. W. Bordass, A. Leaman, and F. Stevenson, Building evaluation: practice and principles. *Building Research and Information*, 38(5), 2010, 564-577. (6)
[7]. B. Bordass,A. Leaman, and P. Ruyssevelt , Assessing Building Performance in Use 5: Conclusions and Implications. *Building Research and Information*. 29(2): special issue: Post- occupancy evaluation. 2001, 144–57. (7)
[8]. A.Cicelsky, Y. Garb, D. Jiao, and I. Meir, Post-occupancy evaluation: an inevitable step toward sustainability. *Advances in Building Energy Research*, 3(1), 2009, 189-220. (8)
[9]. W. Bordass, 2000, Cost and value: Fact and fiction. *Building Research and Information*, 28(5/6), 2000, 338-352. (9)
[10]. K. Hadjri, and C. Crozier, Post-occupancy evaluation: purpose, benefits and barriers. Facilities, 27(1/2), 2009, 21–33. (10)
[11]. M. Riley, N. Kokkarinen, and M. Pitt, Assessing post occupancy evaluation in higher education facilities. *Journal of Facilities Management*, 8(3), 2010, 202-213. (11)
[12]. S. Turnpin-Brooks, and G. Viccars, The Development of Robust Method of Post Occupancy Evaluation. *Facilities, 24* (5/6), 2006, 177-196. (12)
[13]. W. Bordass, A. Leaman, and Eley, A Guide to feedback and Post-Occupancy Evaluation. The Usable Buildings Trust.2006. (13)
[14]. A. Leaman, and F. Stevenson, Evaluating housing performance in relation to human behaviour: new challenges. *Building Research and Information*, 38(5), 2010, 437-441. (14)
[15]. C. Watson, 'Review of building quality using post occupancy evaluation', *Journal of the Programme on Educational Building*, 4, 2003. (15)
[16]. M.A. Hassanain, On the performance evaluation of sustainable student housing facilities. *J. Facilities Management*, 6, 2008, 212-225. (16)
[17]. W.F. Preiser, (2003). Improving Building Performance. NCARB monograph series. Washington, D.C.2003.(17)
[18]. S.W.Ornstein, Post-Occupancy Evaluation in Brazil. Evaluating Quality in Educational Facilities, 2005, 135-143. (18)
[19]. W.F.E. Preiser, H.R.Rabinowitz, and E.T.White.1988, *Post Occupation Evaluation*, (Van Nostrand Reinhold Company, NY, 1988). (19)