

# Assessing a Practical Classroom of Takoradi Technical University – An End-User Perspective

Osei-Poku, G.<sup>1</sup>, Osman, B.<sup>2</sup> and Sackey, N. S.<sup>3</sup>

<sup>1</sup>Department of Hospitality Management, Takoradi Technical University, P. O. Box 256, Takoradi, Ghana.

<sup>2</sup>Public Relations Office, Takoradi Technical University, P. O. Box 256, Takoradi, Ghana

<sup>3</sup>Building Technology Department, Takoradi Technical University, P. O. Box 256, Takoradi, Ghana

## ABSTRACT

This study evaluated the newly refurbished building used as a kitchen for practical lessons at the Hospitality Management Department of Takoradi Technical University, Ghana. It aimed at identifying the challenges faced by users and assessing their satisfaction with the facility. A questionnaire survey approach and covert observations were adopted to gather data. Questionnaires were self-administered to 150 randomly sampled Higher National Diploma students of the department. Data were analysed and presented in tables as frequencies, percentages and mean scores. The study identified lack of changing rooms, lack of storage facilities, congestion and inadequate natural ventilation as some of the challenges faced by users of the kitchen. The overall mean satisfaction score was 2.46 which is an indication that users are dissatisfied with the facility. This study would help inform design decisions to improve upon the performance of future students' practical rooms to be constructed in the institution.

**Key words:** Challenges, Kitchen, Practical's, Post Occupancy Evaluation, User Satisfaction

## 1.0 INTRODUCTION

Takoradi Technical University (TTU) is a tertiary institution offering Technical and Vocational Education and Training (TVET) in Ghana. By the institution's mandate, students who attend this university are trained in practical craft and skills in areas such as Catering, Fashion, Construction, Ceramics and Sculpture, Automobile and Furniture works, among others. Thus, the institution has various practical lesson rooms in the forms of laboratories, kitchens, studios and workshops to enhance the teaching and learning experience. However, owing to the constant increase in students' population over the years, one challenge TTU faces is the inadequacy of the infrastructure serving as accommodation as well as for teaching and learning. Consequently, new workshops were constructed in some instances while some existing structures have also been refurbished and converted to new use as practical rooms.

This paper presents the results of a survey conducted on one such existing structure located on the main campus of TTU that has recently been refurbished and converted to a practical classroom. It is the former dining hall of the institution converted into a kitchen where students of the Hospitality Management (HM) department undertake their cooking practicals. As indicated by Zubairu and Olagunju (2012), assessing structures after they have been occupied is of essence since buildings have a massive impact on occupants' health and safety. More so, Olatunji (2013) opines that the state of the facilities provided in an educational setting have an impact on the productivity of both teachers and students. As a result, they must be accorded with the highest premium for effective functioning. The aim of the study was to find out the challenges users faced by assessing the general layout, the workstations, safety and overall satisfaction of users of the kitchen. The central questions were:

- (a) *What are some of the challenges encountered in using the space?*
- (b) *Are the users satisfied with the facility?*

Consequently, this research would serve as a guide to the Directorate of Works and Physical Development of TTU towards the design of new students' practical training rooms to be incorporated into the overall layout of the new campus the institution is developing.

## 2.0 LITERATURE REVIEW

According to Preiser and Vischer (2005), Post Occupancy Evaluation (POE) is a world-known term for the process of assessing buildings after they have been occupied. Additionally, Ilesanmi (2010) defines it as "the procedures that are followed to assess whether the design decisions made by the architect are of benefit to the occupants of the space". The buildings being assessed could either be newly constructed or renovated ones (Michigan State University, 2008). Since the emergence of POEs in the late 1960s, several people have used the approach to assess many aspects of different building types all over the world (Bordass and Leaman, 2005). It has been established that conducting POE provides the basis for improving existing buildings and enhancing the performance of newer ones to be constructed (Preiser *et al.*, 1988; Khalil and Nawawi, 2008; Oladiran, 2013).

The major phases employed during a POE have been identified as pre-evaluation, evaluation and post-evaluation (Khalil and Husin, 2009; Queensland Department of Housing and Public Works, 2013). The pre-evaluation

phase involves planning the POE, defining its scope, identifying the building users and other feasibility studies. The evaluation phase is when the POE is conducted and data is collected. At the post-evaluation stage, necessary measures are taken to implement research recommendations and the effectiveness of these actions are reviewed. Some researches in previous years have been undertaken on educational infrastructure such as the study done by Kibaya (2013) where he analysed the thermal comfort of the CEDAT building at Makerere University, Uganda. He observed that the efficiency and productivity of both lecturers and students are affected because they spend a greater portion of their daytime within naturally ventilated classrooms when the weather is hot. Hassanaian *et al.* (2012) also carried out a performance appraisal for architectural studio facilities at the King Fahd University of Petroleum and Minerals, Saudi Arabia and found out that such frameworks acted as effective POE methods to identify performance problems of design studios, thus working out remedial measures. The findings of Obeidat and Al-Share (2012) corroborate other researches that the nature of the physical environment has a direct impact on the satisfaction of the space users. However, not much work has been done to assess user-satisfaction with the teaching and learning infrastructure (classrooms) of Ghanaian Technical Universities. Consequently, this research seeks to investigate the challenges faced by users and their level of satisfaction with the new kitchen for practical lessons at TTU.

## 2.1 OVERVIEW OF THE STUDY AREA

The facility under study is located at the northern part of TTU campus close to the main entrance of the school. This building is a single storey structure, the first in a stretch of classrooms, practical workshops and storerooms, and it measures 21.6 metres in length and 12.0 metres in width. Abutting it on its right side is a two-storey classroom. On its left side is a road from the school's main entrance which separates the building from the fence wall. Directly opposite the kitchen is one of the laboratories for the Mechanical Engineering Department. The road lying in front of the kitchen is a major one leading to the southern part of the institution and consequently has constant heavy traffic. To the back of the kitchen and separated by a road is the Hospitality block comprising practical classrooms, a restaurant, a guest house, washrooms and offices for staff. Due to the slope of the site, the building sits on stilts at the back and has a staircase for vertical access. There is also a gas tank which supplies the fuel for the stoves located behind the kitchen. Figure 1 below shows the location of the kitchen.



**Figure 1: Google Earth image showing the Facility under Study**

Conforming to the overall architectural character of TTU, this structure has a gable end roof. Both the external and internal walls of the kitchen are finished in yellow oil paint. The stilts together with the window sills are painted wine colour. The internal floor finish is polished smooth terrazzo while the immediate surrounding is of rough terrazzo. The wooden ceiling panels as well as the window frames are painted white in colour. There are three double doors made of glass with aluminium frames, two of which are located in front with one at the back of the facility for access.

## 3.0 MATERIALS AND METHODS

This study was conducted by covert observations during practical sessions and a questionnaire survey. The population of the study comprised students offering Higher National Diploma (HND) in Hotel, Catering and

Institutional Management (HCIM) at the HM department. The teaching time tables served as a guide to know when the kitchen was put to use by a particular HND class. The observational studies were carried out when different classes used the practical room during the daytime hours of 8:00 am to 5:00 pm in order not to disrupt the lessons. Although the duration of lessons varied among the different classes, each class was observed for one (1) hour per week as they used the kitchen. All data were collected between May, 2017 and January, 2018. Respondents were randomly sampled from each of the three classes. The total sample size used for the research was 150. Out of this number, 111 questionnaires were retrieved indicating a response rate of 74 %. The questions were geared towards throwing more light on the facility from the users' perspective. In Section one of the questionnaire, respondents were required to give their demographic data. The second section sought information on the level of seriousness of some identified challenges (1 = not very serious, 2 = not serious, 3 = neutral response, 4 = serious and 5 = very serious). Respondents' satisfaction levels were also obtained using a five-point Likert scale ranging from 1 = highly dissatisfied to 5 = highly satisfied. Data analysis was done using simple descriptive statistics and the mean score. The mean was calculated by the formula (as used by Ojo and Oloruntoba (2012)):

$$\text{Mean score} = \frac{1n_1+2n_2+3n_3+4n_4+5n_5}{N}$$

Where

- $n_1$  is the number of responses for highly dissatisfied,
- $n_2$  is the number of responses for dissatisfied,
- $n_3$  is the number of responses for neither satisfied nor dissatisfied,
- $n_4$  is the number of responses for satisfied,
- $n_5$  is the number of responses for strongly satisfied,
- N is total number of respondents

## 4.0 RESULTS AND DISCUSSION

### 4.1 Demographic Information

The perception of the end users of a facility can be influenced by demographic characteristics such as gender and duration of stay in the building (Lai and Yik, 2007). As such, some demographic information was sought from the users of the kitchen so as to situate the research in a context. A total of 111 questionnaires were filled

**Table 1: Demographic Information**

Characteristics	Frequency	Percentage
<b>Gender of respondents</b>		
Male	8	7.2
Female	103	92.8
Total	111	100.0
<b>Level of Respondents</b>		
Year 1	40	36.0
Year 2	57	51.4
Year 3	14	12.6
Total	111	100.0

by the HND students. Out of this number, 103 were females while 8 were males. Also, among the three levels of study, majority of the respondents (51.4 %) were in year two, followed by those in year one (36.0 %) with only 12.6 % being in year 3. This informs that a greater percentage (64.0 %) of respondents have used the facility under study for more than a year, therefore, their perceptions of the space hold valid as a true reflection. Table 1 illustrates the demographic information.

### 4.2 Assessing the Kitchen

Respondents were asked if they have had the opportunity to use the new kitchen for practical lessons. Majority (98.2 %) answered in the affirmative with 1.8 % indicating otherwise. Subsequently, the total number of respondents (N) used for the analysis was 109. This is because they were the people with the experience of using the space who could thus give reliable information to help in the assessment of the kitchen. A breakdown of their responses is found in Table 2.

**Table 2: Assessing the Kitchen**

Characteristics	YES		NO		Total (N)
	Frequency	Percentage	Frequency	Percentage	
Have you used new kitchen for practical lessons	109	98.2	2	1.8	111
Is the location of the kitchen conducive for effective teaching and learning	82	75.2	27	24.8	109
Is the work floor safe while working	96	88.1	13	11.9	109
Are the finishes used for the floors, walls and ceiling suitable	91	83.5	18	16.5	109
Are there safety indications on the door, walls or floor to follow when using the kitchen	30	27.5	79	72.5	109
Are there safety gadgets such as fire extinguisher in the kitchen	39	35.8	70	64.2	109
Do you know how to use them in case of fire outbreak	33	30.3	76	69.7	109
Have any of the exits been designated for emergency purpose	37	33.9	72	66.1	109
Do you know what to do and how to exit the facility in case of emergency	53	48.6	56	51.4	109
Are you exposed to any form of pollution in the kitchen due to the adjoining road and workshops	81	74.3	8	25.7	109

Source: field work 2017

In the opinion of 75.2 % of the respondents, the location of the kitchen is conducive for effective teaching and learning. Again, 83.5 % indicated that suitable finishes were used for the floors, walls and ceilings of the facility. Consequently, 88.1 % admitted that the work floor was safe during meal preparation. However, 72.5 % of respondents indicated that there were no safety indications on the doors, walls and floors. Another 64.2 % responded that there were no safety gadgets such as fire extinguishers. Granting that there were, almost 70.0 % of the users of the facility do not know how to use them in the event of an emergency. Another 51.4 % do not know what to do in the event of an emergency such as a fire outbreak.

#### 4.3 Challenges Encountered with using the Kitchen

With regards to challenges the users of the new kitchen encountered, results from the walkthrough and the survey were similar. For a total of 82.5 % of the respondents, the lack of storage facilities was a very serious/serious challenge. Similarly, a whopping 86.3 % described the lack of changing rooms as very serious and/or serious. The total percentage of respondents (63.3 %) who considered the inadequate ventilation as serious and very serious was appreciably higher than those who perceived it to be not serious/ not very serious (22.0 %). Congestion in the kitchen was also considered as very serious and serious by 52.3 % of respondents. Again, a significantly higher percentage of respondents (53.2 %) classified dust from the surrounding roads as a very serious challenge during meal preparation as compared to the 6.4 % who thought otherwise. Found in Table 3 are the responses of students on the challenges they usually encountered while using the facility.

**Table 3: Challenges encountered with using the kitchen**

Characteristics	VS		S		N		NS		NVS	
	F	(%)	F	(%)	F	(%)	F	(%)	F	(%)
Congestion	38	(34.9%)	19	(17.4%)	18	(16.5%)	20	(18.4%)	14	(12.8%)
Dust pollution from surrounding roads	58	(53.2%)	28	(25.7%)	5	(4.6%)	11	(10.1%)	7	(6.4%)
Noise from workshops and vehicle	53	(48.6%)	20	(18.4%)	11	(10.1%)	17	(15.6%)	8	(7.3%)
Insects	41	(37.6%)	26	(23.9%)	18	(16.5%)	14	(12.8%)	10	(9.2%)
Inadequate ventilation	43	(39.4%)	26	(23.9%)	16	(14.7%)	14	(12.8%)	10	(9.2%)
Difficult in moving around the kitchen	28	(25.7%)	16	(14.7%)	17	(15.6%)	21	(19.3%)	27	(24.7%)
Lack of changing rooms	68	(62.4%)	26	(23.9%)	7	(6.4%)	7	(6.4%)	1	(0.9%)
Lack of storage facility	63	(57.8%)	27	(24.7%)	10	(9.2%)	9	(8.3%)	0	(0.0%)
Inadequate security	47	(43.1%)	32	(29.4%)	13	(11.9%)	12	(11.0%)	5	(4.6%)

Source: field work 2017

LEGEND: VS = Very Serious; S = Serious; N = Neutral; NS = Not Serious; NVS = Not Very Serious

From the walk-through, it was observed that no storage areas and changing rooms were provided for use. Therefore, students had to carry along all the utensils needed for each practical lesson. These utensils are left unguarded on the bare ground outside of the kitchen. The findings also indicate that ventilation within the facility is a major challenge. Although heat extractors and windows were provided, the space gets very hot due to the use of naked flames and the number of students. Literature has shown that room temperature is one of the environmental factors that can greatly affect the standard of teaching and learning in classrooms (Hassanain et al., 2012). When the space gets hot, all the three doors are usually opened in addition to the windows. These doors, however, do not have any screens or trap doors paving the way for entry of insects especially houseflies, small reptiles and dust to contaminate the food. These practices leading to food contamination are unacceptable in the field of food preparation where hygiene is of paramount importance.

#### 4.4 Assessing users' satisfaction

This section presents users' satisfaction in relation to number of students at workstation, arrangements of workstation within the kitchen, height of the workstation among other related issues.

It can be seen from Table 4 that the mean values for the height of the workstations (3.00), the number of students at each workstation (2.76) and the arrangement of the workstations within the kitchen (2.70) were an indication of the users' satisfaction with the workstations fitted in the facility. On the other hand, they were dissatisfied with the water supply (2.10) and the circulation within the kitchen (2.45) among others. Obeidat and Al-Share (2012) posit that the physical environment of practical rooms have a bearing on the satisfaction of users. Consequently, the overall mean score of 2.46 indicated the respondents' were dissatisfied with the kitchen.

**Table 4: Assessing users' satisfaction**

Attributes	Mean	Rank	Interpretation
Number of students at workstation	2.76	3 <sup>rd</sup>	Satisfied
Arrangement of workstations within the kitchen	2.70	4 <sup>th</sup>	Satisfied
Height of the workstation	3.00	1 <sup>st</sup>	Satisfied
Number of doors	2.60	5 <sup>th</sup>	Satisfied
Number of windows	2.79	2 <sup>nd</sup>	Satisfied
Circulation within the kitchen	2.45	6 <sup>th</sup>	Dissatisfied
Firefighting and prevention measures	1.88	8 <sup>th</sup>	Dissatisfied
Storage facilities	1.83	9 <sup>th</sup>	Dissatisfied
Water supply	2.10	7 <sup>th</sup>	Dissatisfied
<b>Overall satisfaction score</b>	<b>2.46</b>	<b>-</b>	<b>Dissatisfied</b>

#### Interpretations for the Mean Scores used in Table 4

Mean Score	Interpretation
< 1.49	Very Dissatisfied
1.50 – 2.49	Dissatisfied
2.50 – 3.49	Satisfied
> 3.50	Very Satisfied

*(Najib et al., 2011 as used by Osei - Poku, 2016)*

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

This study identified that the new kitchen lacked safety signs, fire fighting equipment and emergency exits. Some of the challenges students faced are lack of changing rooms and storage areas, inadequate ventilation and congestion due to large class sizes. It further revealed that students were dissatisfied with the water supply to the kitchen. Nevertheless, the findings showed that the workstations in the kitchen are appropriate in terms of ergonomics, making users satisfied with them. In order for the academic infrastructure to provide the right teaching and learning environments for the practical nature of the studies carried out at the HM department, some remedial actions to be taken include the provision of trap doors to reduce the amount of insects and dust that enter the space when the doors are opened. Again, changing rooms fitted with washrooms and storage spaces should be made available as a matter of urgency. Fire safety should be improved with the provision of fighting equipment and safety signage in the kitchen. Students should be trained on how to use them in the event of an emergency as they work with naked flames. There should also be constant water supply to help the students keep a high level of hygiene. These would in effect enhance the conditions under which the students take their practical cooking lessons.

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