

Students' Perceptions of Shared Living in a University Hostel at Dhaka, Bangladesh: A Post Occupancy Evaluation

Asma Siddika* / Zannatul Ferdous**

* Department of Architecture, Ahsanullah University of Science and Technology, Bangladesh

** Department of Architecture, Ahsanullah University of Science and Technology, Bangladesh

ABSTRACT

 Hostels are popular accommodations for students. Urban based educational systems in Bangladesh encourage students to come to the city where shared living is preferable option for them. These accommodations are inadequate, are highly populated and shared rooms are common scenarios. However, although shared living raises the question of personal space, it facilitates better use of resource and is a feature of sustainability. This study examines the students' perception of shared living at one of the leading universities in Bangladesh. A post-occupancy evaluation is used to address physical and social variables. By assessing residential satisfaction, this paper hopes to provide valuable feedback to generate more efficient shared spaces for future design.

Keywords: Shared Spaces, Student Accommodation, Residential Satisfaction, Privacy, Security, Territory

INTRODUCTION

Globally university run student hostels are the preferred accommodation for many students (Khajehzadeh and Vale, 2014). An economical dorm plan found in most Bangladeshi universities has rooms located along a single side of a corridor. The experience of living in such a dorm for a year indicates that resident students face many social and mental problems. The spatial organization along with

often having several residents in one room, has led students to refurbish their rooms and move some daily activities into the corridor. Sharing space has advantages, such as improved social interactions, but there seems to be limits on the acceptable number of users and how shared spaces are organized (Khajehzadeh and Vale, 2014). Many of these dorms are old and their refurbishment should be done based on studies of the existing situation to improve advantages and control disadvantages

of this building type (Amole, 2009 and Hassanain, 2008). This paper presents an investigation into such a hostel in Dhaka using Post Occupancy Evaluation (POE) techniques, with a focus on how space is shared. Sharing space is an attribute of sustainability, since it leads to more efficient use of resources (Vale, R and Vale, B 2009; 2013). This paper concludes with suggestions for refurbishment to existing problems and for future designs.

BACKGROUND

Dhaka is the capital of Bangladesh and one of the major megacities in the world. It is the 9th largest city in the world (World Bank, 2010). This city approximately accommodates a vast population and its population is projected to grow from 1.5 million to 26 million people by 2035 (Dhaka Structure plan). For this mammoth population housing is a real need and in turn the housing sector is facing major challenges. The vibrant culture and thousands of Bangladeshi businesses and international corporations have contributed to the migration and population growth. Dhaka is experiencing one of the highest rates of urbanization in the world. About 29.38 per cent (BBS Census, 2011) of its total population lives in urban areas and by 2030 the rate of urbanization will be more than 40 per cent. Being the economic and educational hub, most of the renowned public and private universities are situated at Dhaka. That's why every year a great number of students migrate from the other districts to Dhaka in order to get their education. As students stay here only for the academic purposes, they prefer the university run students' hostel facilities for their accommodation. These hostels have several problems regarding privacy, interaction, and territory.

Research into student housing by architects and behavioral scientists can be broadly categorised into four types (Mullins and Allen (1971) and Riker and Lopez (1961)). Most researchers focus on the influential aspects of the facilities on student satisfaction (Foubert et al (1998), La Roche et al (2010), Najib et al (2011), Amole (2008 and 2009), Hassanain (2008), Kaya and Erkip (2001), Thomsen and Eikemo (2010)). A second group of research has to do with perception of home and attachment to space (Thomsen (2007), Roger and Johnson (2005) and Khozaei et al (2010)), the third group's inquiry deals with social happenings (Amole (2005) and Rutledge (2012)), and finally investigation into the role of socio- physical backgrounds on the resident satisfaction (Najib et al (2012), Amole (2005 and 2009), Amole and Mills-Tettey (1998), Gifford (1997), Kellek and Berkoz (2006), Christie et al (2002), Doygun and Gulec(2012), Kaya and Erkip (2001) and Thomsen and Eikemo (2010)). Amole (2005) is the only researcher to investigate highly occupied student's rooms, as in this case study. Most studies have a negative view of sharing space rather than seeing it as a sustainable trend.

A BRIEF REVIEW OF THE CASE STUDY

There are approximately fourteen public and nearly fifty private universities in Dhaka. Bangladesh University of Engineering and Technology (BUET), being one of the best universities in the country, have several students' hostels for both males and females. The females' hostel, Chatri Hall, has been selected as the building for this research, as most of the public university hostels are of the same style.



Figure 1:
Different views of the hostel

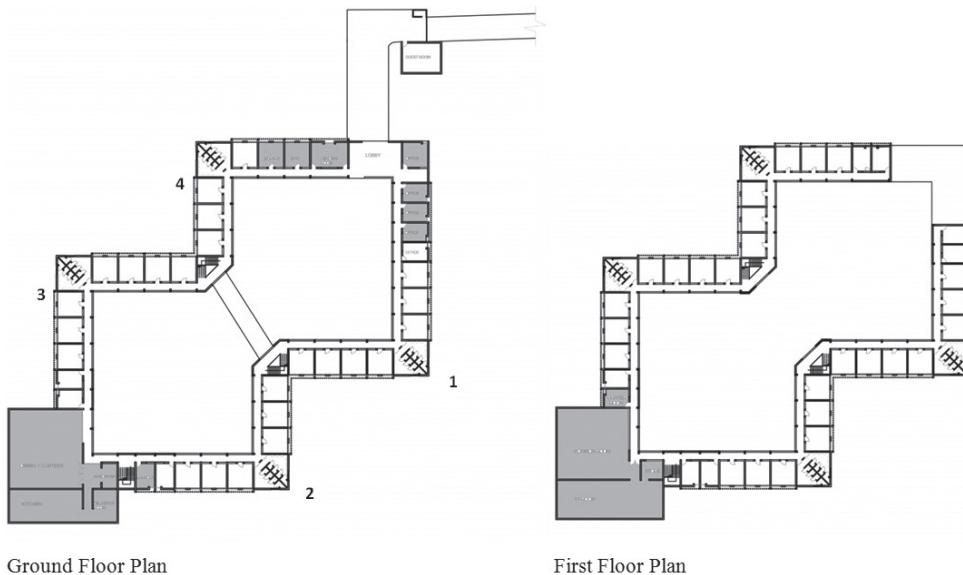


Figure 2:
The building plan and location of common facilities.

Chatri Hall is situated on BUET's premises. It is a four story building of single loaded corridors (Figure 1). The rooms are arranged around a central courtyard which is a vernacular arrangement of traditional settlements. The basic layout of the building is the juxtaposition of two squares. The rooms are arranged along both in north-south and east-west elongated arms. There are four blocks named 1,2,3 & 4 (Figure 2).

The hostel accommodates almost 450 students. There are two types of rooms, the first type accommodates four engineering students per room ($16' \times 16' = 256$ sft) and the second type accommodates two architectural students ($11' \times 16' = 176$ sft). The first category of rooms house four beds, four reading

tables, four book shelves and four table fans. The second category of rooms house two beds, two reading tables, two book shelves and two table fans. All students here are female.

The entrance of the building is from north-east corner, whereas the common facilities are at the other corner on the ground and first floor of the building. There is an office, a reading room, a small library, a gymnasium, the dining room, a canteen, the laundry, a commons room, a TV room and a prayer room (Figure 3).

Three staircases connect the residential floors and students must use the ground floor corridors to access upper levels



Figure 3:
Images of the Prayer room, Dining and laundry room

METHODOLOGY

The study employs a quantitative data collection at one female student hostel. The paper uses Post Occupancy Evaluation (POE) and the data was collected via observation, interviews and a questionnaire. Observations included observing and talking with students, collecting voice recordings and photographs, writing notes and drawing plans of the hostel. A random sample of 80 female students from Chatri Hall was selected for the questionnaire survey. The respondents represent 17% of the Hall's population. Using a simple random cluster sampling procedure, the respondents were selected from each block and every floor level, 20 students per floor. This sampling method was chosen according to methods used by Lam *et al.* (1998); Adamchak *et al.* (2000) and Burton *et al.* (2005) because the respondents are already "naturally" clustered into groups, that is, by block. As a sample of the population, they were selected from different sides of the building's floors and distances from the common facilities. The demographic form sought information on age, student level, marital status, religious affiliation, duration of stay, name of the block etc. Respondents are between 19 to 25 years old, undergraduate female students.

ANALYSIS

Functional Analysis

The building has been treated equally in all the orientations. The rooms on the west side are very uncomfortable to live in as that is where solar radiation is most prominent. The composition of the building is two juxtaposed square forms. The entrance of the building is at the corner point of a square. This results in the even distribution of the users not being ensured. The rooms are arranged around a single loaded corridor, that's why the corridors of the ground floor must be crossed to access the upper floor rooms and common facilities, thus generating noise. Rooms at the opposite corner of the common facilities on each floor are quieter than those towards the common facilities. The lack of noise allowing students to concentrate on their studies affects student satisfaction levels. Satisfaction increases with the increasing distance from the common facilities, Amole (2009) also found student satisfaction increased as the length of corridors decreased. The rooms have less flexibility as they are very tightly designed.

There are three sets of staircases, two at the center point of the building and one near the common facilities (Figure 4). Analysis shows a relationship between story number and corridor noise. Residents of the ground floor have the most and third floor the least noise problem in the corridor, with problems occurring for respectively 40.2%, 32.7%, 17.5% & 8% in ground, first, second and third floor.

There is no accessibility for differently/less physically abled people.

Analysis also shows 48.2% of the residents believe that the best level is the first floor because of it is easily accessible and has less corridor noise. The following are percentages of ranking: 25.6% residents believe the ground floor, 15.4% the second and 10.8% the third floor are the best levels. The third floor is best regarding the corridor noise problem, but due to number of stairs made it the worst one. Najib and Yusof (2009) indicates higher satisfaction in quieter study environments in student accommodation. In this study first floor students are most satisfied with their rooms (65%) and third floor students are least (38%). This contradicts the findings of Kaya and Erkip (2001) that students living at higher levels were more satisfied with their rooms, feeling these were larger and less crowded than those on lower levels. It seems other parameters like noise and easy access affect student satisfaction more than perceived privacy.

Physical & Mental needs:

Residential rooms should fulfill daily physical needs (eating and sleeping), mental needs (privacy and interaction) and private activities (listening to music and talking on the phone). Observations show many of these functions cannot happen well in the rooms and residents go elsewhere, such as outdoors or to friend's houses, to fulfill their needs. Amole (2005:211) calls this "avoidance and withdrawal", indicating a poor relationship between the room and its necessary functions.

Area per student:

Human factors also relate to furniture. In this study 6.4 sqm per student is assigned where a bed, a table, a moveable book shelf and a cabinet is provided. Usually other furnishings are brought in by students such as table fan and small storage rack, thus

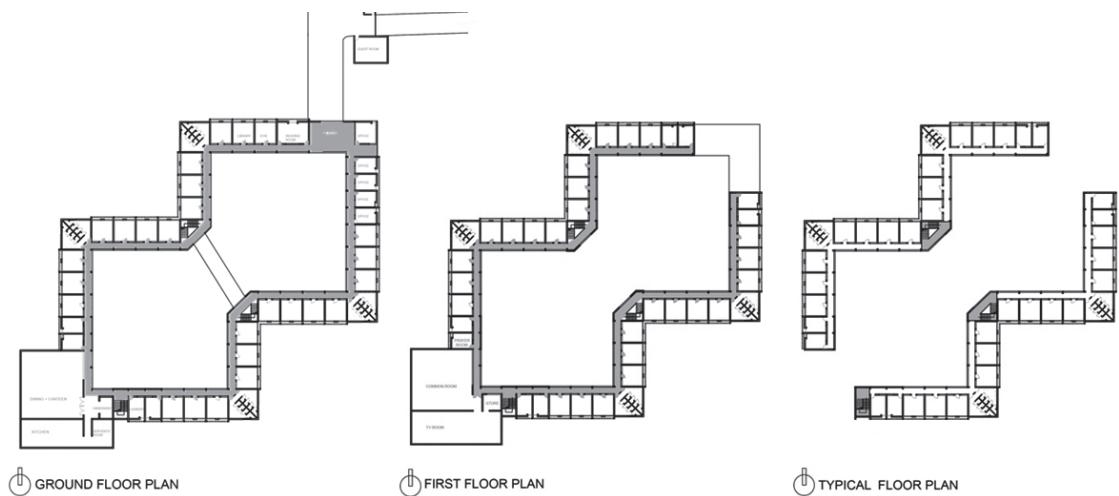


Figure 4:
Circulation, horizontal and vertical

worsening the situation. It's below the international standard of a 9-15m² one bed/study space and 13-19m² two bed/study (Neufert, 1980).

Kitchen & Toilet:

The shared kitchen, baths and toilets are well designed, apart from odor control issues, although the use rate of 1 toilet/6 student and 1 bath/6 students meets international standards of 1 toilet and 1 bath/6 student (Neufert, 1980).

Storage:

The hostel rooms lack storage. It is noted that the residents brought in some additional book racks into the rooms for storage. Also students use the window space for food, stationery, and cosmetics storage. Sometimes they use suitcases to store clothing and other necessary utilities. Amole (2009) found a relationship between adequate storage space and resident satisfaction in student housing in Nigeria

Flexibility and change:

There is a very small scope for flexibility and change in terms of adding another student in the hostel rooms. However, the arrangement of the furniture within the room is flexible.

Behavioural analysis

Building use:

How the buildings are used is an important matter. The point is how different spaces in the building, such as private rooms, common rooms, and the entry veranda are used by the residents. Findings from observation and questionnaires concerning student activities in different spaces within the hostel show use varies during holidays (weekend, preparatory leave or other leave) and when classes are conducted in the university. During the holidays students are more active in the common spaces like the TV room, common rooms, prayer room, library, gym than they are during class days.

Private room:

Hostel dorm rooms are spaces where multiple activities take place. There is no privacy within the rooms as occupants can easily be seen by others due to the rooms' shape, size and capacity. Often students have to move elsewhere for private activities. For example, to avoid being overheard students have to go into the corridor or courtyard to use their mobile phones. Often activities like engaging in private conversations, listening to music, singing, etc. cannot happen in rooms because of disturbing others. Sometimes sleeping and regular

studying are also difficult due to the noise levels. According to the survey 90.4 % of the students study in their room, among them 70.5% of the students say their situation is not good for studying. From the survey the times of 10am-12am, 2pm-4pm and 10pm-1pm were identified as the best times to studying when others are sleeping or attending their classes. The worst times for studying are when classes are starting or ending and students are preparing to going to class or returning to their rooms for lunch, rest or dinner. Generally these noisy times are 7AM-10AM, 12PM-2PM and 5PM-7PM. According to Najib and Yusof (2009), studying is highly associated with student satisfaction.

The best time for sleeping is 12pm-6pm as 75.2% of the students say their situation is not good for sleeping in daytime. Although dining space is allocated for eating around 40.8% of the students take their breakfast in private rooms. More than 20.8% of the students preferred using their room for lunch and dinner after collecting food from dining space.

Corridor/Veranda:

This is a flexible space and mainly used as circulation space. Other activities like drying cloths, storing extra items, using mobile phone, listening music etc. also happens on the verandas. Activities on the veranda are influenced by the level or story. The ground floor verandas are mainly used for circulation and clothes drying while the upper floor verandas are used more for looking at the views, gossiping, and sometimes for studying. The times activities take place are influenced by the direction the verandas face. On verandas facing west, people are hardly seen between 2PM-4PM during the summer season as they avoid the high solar intensity. On the south facing verandas students enjoy sunlight in the morning during the winter season.

Dining space:

Students go to the dining room for breakfast from the canteen. The other two meals, lunch and dinner, are served in dining room from the hostel kitchen. According to the survey, the story and block number influence the use of the dining space. For lunch and dinner students generally go to the dining space, but are flexible in the case of breakfast and snacks. From the questionnaire 50.4% of the students on the third floor and 80.2% of the students on the fourth floor do not go to the dining spaces for breakfast

and snacks, while this number on the ground floor is only 10.7%. The study also indicates that students in block 1 & 4 are reluctant to go to the dining room because of their distance from dining room. At this point the horizontal and vertical distances of the dining space is a factor.

Common room and TV room:

The study shows that normally the common room is non-active. The common room is allocated for different social and cultural activities or indoor games. But observations made at different times of the day over a number of days showed this room is used more for personal activities like studying or using mobile phones. During PL time 10% of the students use the common room for studying. Around 5% of the students are regulars in the TV room. This room is occasionally active.

Prayer room:

Using the prayer room for daily prayer is influenced by the location of the room. The room is used for daily prayer by students whose rooms are nearby. Weekly Islamic discussions are held here. Sometimes students also use this room for studying and using their mobile phones.

Library & Reading room:

Because of the limited time the room is opened, 7PM-9PM, and its poor resources students are not interested in using the library. Around 5% of the student residents and sometimes non-residents, day students, use the reading room. In the survey the students ranked three spaces they would use for study if not their private rooms. Their answers indicate that the common rooms; the TV room, the reading room and the prayer room are the preferred study spaces.

Courtyard:

The central courtyard represents a traditional vernacular architecture in Bangladesh. Activities of just laying around, gossiping, using mobile phones, sometimes studying and other personal activities are conducted in the courtyard. This space is highly active from 5PM-7PM. From the observations made it seems dissimilar to a traditional courtyard type of house regarding the activity pattern and intensity of use. Although 95% of the students indicated that their

favorite space was the courtyards, when they were asked how much times they spend in courtyard per day, answers show an inverse situation. Interestingly they like the space but usually don't go there. 80.5% say they use the courtyard space only to pass through in order to go outside of the hostel. In absence of any paved pathway it is not possible to pass through the courtyard during the rainy season because of the wet clay. In the summer they do not use it due to the hot sun. During those two seasons students use the surrounding corridors for passing through. According to the survey, the floor levels influence the activities in courtyard. Students on the upper levels are less active in courtyard than those living on the ground floor. Students on the ground floor also say that the distance between their rooms and the courtyard access points is a factor for using these spaces. Accessibility to courtyard is not conducive when there are only four access points to the courtyard.

Proximity and territory:

The overall hostel functions and security are influenced by territorial behaviors. Students are faced with problems because of overcrowded rooms, thus personal territories are not well defined. The boundaries of personal territories depend upon personal interactions and feelings. When students were asked to define "How much and which parts of the room are personal to you?" 20.5% said only the bed space, 70.2% said only the space within their bed and table and only 10.3% felt they had ownership of the whole room. They think feelings

of ownership have a connection with relationships between roommates. In rooms the personal space, the space within bed and table, is not clearly designated enough so that the others would not enter. This has led to further defining this territory by screening it with movable barriers like bookshelves or small storage racks (Figure 5). Rearranging the provided furniture is a common strategy in this hostel.

According to Lang, (1987) a shared student room is a central territory. In this hostel this territory is well defined and strangers do not enter without permission. Supporting territories are the corridors/verandas, toilets, baths, the common room, the TV room, the prayer rooms, the gym., the library and TV room where students feel some possession but not ownership. "Supporting territories are either semi-private or semi-public" (Lang, 1987:150) and in these hostel supporting territories are not well defined. The nearby outdoor space is peripheral territory, all can use it but over which there is no sense of possession. So it can be said that the central courtyard is an in-between expanse of supporting and peripheral territories. The hostel's privately shared rooms are connected to corridors/veranda, the semi-public supporting territories. So ideally there should be a semi-private supporting territory between rooms and corridors. It seems that sometimes students have created this with furniture arrangements. This is the access hierarchy problem that leads to security problems. So students have a very low sense of possession over the corridors. There is a relationship between the storey number and corridor security. 92.5% of the students on the ground floor believe there is a high rate of stealing in the corridors and



Figure 5:
Different arrangements of residential rooms.

they feel insecure in their rooms. When this was rated on the first, second and third floors the results are respectively 60.2%, 40.5% and 30.8%.

Sense of ownership:

According to Khozaei et al (2010) there is a positive correlation between sense of attachment to space and satisfaction. From the analysis most students have ownership of shared rooms but have a poor sense of ownership within the public spaces. The study also shows that as their distance increases from public spaces a reduced sense of ownership transpires. For example, students in block 2 and 3 have a better sense of ownership with the common facilities of the dining room, the common room, the TV room and the prayer room than do the students in block 1 and 4. According to Lang (1987), Sense of ownership of space is a feature of territory.

Privacy and interaction:

Privacy and interaction are two challenging issues in hostel design. When one is achieved the other can be hampered. Privacy can be seen as person-to-person, person-to-group, group-to-person and a group-to-group social unit relationship (Altman, 1975). An important feature of privacy and interaction is a person's ability to set boundaries freely and to change and remove these (Schwartz (1968) in Altman (1975)). Shared rooms are such spaces which should simultaneously provide privacy and interaction. From the study, 76.5% think their room is the best place for interaction while 23.5% think the corridor and other spaces work better. In the case of privacy 80.4% of the students say they have to go outside of the room for private conversations and other private works. Only 19.6% think they have a good situation for privacy in their room

CONCLUSION

This study discovered that shared spaces produces problems in terms of territory and private space which is also supported by Khajehzadeh and Vale (2014). In the case of shared space the important factor is the number of users. Corridor noise is a common problem in hostels. Designers should pay attention to the research to develop ways to reduce unwanted traffic, which produce dissatisfaction as well as a lack of sense of security. The location of staircases and lengths of corridors are important.

As in the case study's buildings, if an additional staircase could be added to the entry lobby then the intensity of traffic in the corridors of traffic block 1 & 4 would be minimized.

Shared common spaces should be positioned in a central area to increase their use and viability of the space. This is also supported by Khajehzadeh and Vale (2014) who found that a long access route to shared common spaces can lead to their misuse or low use, although low use can lead to greater satisfaction. Rodger and Johnson (2005) found that the suite-style student housing led to a greater sense of belonging compared with dormitory styled buildings. Obviously this comes down to cost but a clustered arrangement around common vertical circulation is more likely to lead to satisfaction with this style of buildings. According to this case study the central courtyards in at this hostel could be a good space for various activities similar to those of traditional courtyard houses.

From study at the point of maximum corridor noise at ground floor because of pass through traffic which led to greater dissatisfaction, courtyard may be an alternative way for pass through traffic. Different design solution for greater integration of courtyard space with ground floor and other floors may enhance activity at courtyard which led to greater satisfaction. From study in courtyard maximum activity held at central connecting paved area. So installation of some soft-paved area or other landscaping idea may enhance courtyard activity.

It was also found that insufficient storage space within the private rooms creates an inefficient use of space which leads to a so called gathering environment. Amole (2009) found storage space of personal and group levels plays an important role in users' satisfaction. Khajehzadeh and Vale (2014) also found private storage space for groups and individuals can lead to more security, satisfaction and efficient use of space. To increase satisfaction in room design, personal spaces with a defined territory is essential. In hostels, highly occupied rooms are not good for privacy and personal activities. In that case separate study spaces and gathering spaces could help, but these spaces must be well defined for small groups. More defined territories can lead to a better sense of possession. Thus territories need to be defined in internal rooms and with corridor connections. According to Khajehzadeh and Vale (2014) a good access hierarchy should proceed from private, semi-private, and semi-public to public

space and absence of any of these four spaces can lead to a sense of insecurity and failure. In this hostel semi-public space for each block could be created by using a control space in the staircase. But this will create poor accessibility to common spaces like dining, common room, TV room because these are only at one end of the building

Finally, it can be said that if well designed, the spaces, in terms of privacy, territories and access hierarchy shared space, would be more efficient. This could be realized even in buildings with simple organizational forms that are cheap and easy to build considering our local context. This is an area for further research considering our present social and political situation when the numbers of singly populated households are increasing day by day, and shared living can be suitable for people in a densely populated city like Dhaka.

Dhaka structure plan 2016-2035; chapter 06: Affordable Housing for all.

Gifford, R.:1997, Environmental psychology: Principles and practices. USA: Allyn and Ba- con.

Hassanain, M. A.: 2008, On the performance evaluation of sustainable student housing facilities, *Journal of Facilities Management*, 6(3): 212-225.

Kaya, N. and Erkip, F.: 2001, Satisfaction in a dormitory building: The effects of floor height on the perception of room size and crowding. *Environment and Behavior*, 33(1): 35-53.

Kellekc, O. L. and Berkoz, L.: 2006, Mass housing; User satisfaction in housing and its environment in Istanbul, Turkey. *European Journal of Housing Policy*, 6: 77-99.

Khajehzadeh, I. and Vale, B.: (2014), Shared space in a dorm. Proceeding of the 48th International Conference of the Architectural Science Association 2014, the Architectural Science association &Genova University Press, pp: 163-174.

Khozaei, F.; Hassan, A.S. and Khozaei, Z.: 2010, Undergraduate students' Satisfaction with Hostel and Sense of Attachment to Place: Case Study of University Sains Malaysia. *American Journal of Engineering and Applied Sciences*, 3(3): 516-520.

La Roche, C. R.; Flanigan, M. A. and Copeland, P. K.: 2010, Student Housing: Trends, Preferences And Needs, *Contemporary Issue in Education Research*, 3(10):45-50.

Lang, J.: 1987, Creating architectural theory, The role of the behavioural sciences in environmental design. New York: Van Nostrand Reinhold.

Najib, N. U. and Yusof, N. A.: 2009, A review of student housing facilities in higher learning institution. Proceeding of the 3rd International Conference on Built Environment in Developing Countries (ICBEDC 2009), Dec. 2-3, School of Housing and Building Planning, Malaysia, pp: 1817-1831.

Najib, N. U. M.; Yusof, N. A. and Osman, Z.: 2011, Measuring Satisfaction with Student Housing Facilities. *American Journal of Engineering and Applied Sciences*, 4 (1): 52-60.

Najib, N. U. M.; Yusof, N. A. and Sani, N. M.: 2012, The effects of students' socio-physical backgrounds onto satisfaction with student housing facilities. *Social and Behavioural Sciences*, 62: 64-74.

Neufert, E.: 1980, Architects' Data. New York; St. Albans, Eng.: Granada Pub.

REFERENCES

Altman, I.: 1975, The environment and social behavior. Monterey, CA: Brooks/ Cole.

Amole, B. and Mills-Tettey, R.:1998, Income and housing satisfaction: A study of FESTAC housing estate in Lagos, Nigeria. *J. Environmental Design and Management*, 1&2.

Amole, D.: 2005, Coping Strategies for Living in Student Residential Facilities in Nigeria. *Environment and Behavior*, 37: 201.

Amole, D.: 2008, Residential Satisfaction and Levels of Environment in Students' Residences. *Environment and Behavior*, 41: 866.

Amole, D.: 2009, Residential satisfaction in students' housing. *Journal of Environmental Psychology*, 29: 76-85.

Burton, M.L., M.D. Croce, S.A. Masri, M. Bartholomew and A. Yefremian, 2005. Sampling from the united states census archives. *Field Methods*, 17: 102-118.

DOI: 10.1177/1525822X04270339 Christie, H.; Munro, M. and Rettig, H.: 2002, Accommodating students. *Journal of Youth Studies*, 5(2): 208-235.

Doygun, O. and Gulec, S.: 2012, The problems faced by university students and proposals for solution. *Social and Behavioural Sciences*, 47: 1115-1123.

Population monograph of Bangladesh, Volume 7. Bangladesh Bureau of Statistics, Statistics and Informatics Division, Ministry of Planning.

Rodger, S.C. and Johnson, A.M.: 2005, The impact of Residence Design on Freshman Out-comes: Dormitories Versus Suite-Style Residences. Canadian Journal of Higher Education, XXXV(3): 83-99.

Rutledge, K.: 2012, The Influence of Residence Hall Design on College Students' Grade Point Averages, On-Campus Involvement and Sense of Community (Honours Theses). The University of Southern Mississippi, United States of America.

Thomsen, J.: 2007, Home Experiences in Student Housing: About Institutional Character and Temporary Homes. Journal of Youth Studies, 10(5): 577-596.

Thomsen, J. and Eikemo, T. A.: 2010, Aspect of student housing satisfaction: a quantitative study. Journal of Housing and Built Environment, 25: 273-293.

Vale, R., & Vale, B.: 2009, Time to eat the dog? The real guide to sustainable living. London: Thames and Hudson.

Vale, R., & Vale, B. (Eds.): 2013, Living within a Fair Share Ecological Footprint. Abingdon: Earthscan.