

Sustainable Residential College: Study on the Room Space Comfort at Public Universities Residential College in Malaysia

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Abstract

This study is to assist the development of the concept of sustainable residential colleges in Malaysia. This study examines the comfort of staying in the room of public university residential colleges in Malaysia. The methodology used is through questionnaires on 2874 respondents from seven public universities in Malaysia. The questionnaire is divided into two parts, part A related to respondents' demographic that contains five question items and Part B related to comfort of the room in the residential colleges which contains 11 question items. In addition, in section B there are two sub-topics, namely the comfort on room physical space and comfort on interior equipment of the rooms' occupants. The data obtained were analysed using percentages to determine the level of the comfort in every item related questions of the rooms' occupants. Results showed that all eleven question items occupant comfort on room at a comfortable level and shows of the rooms provided by the Malaysian public university residential college meets the current needs of occupants. Comfort in occupant room is important so that residents can concentrate while doing revision and get enough rest so improve the quality of life while stay in residential colleges. As a result of this assessment, it is possible to find the current situation of the occupants of the existing accommodation facilities that will be used to develop a sustainable residential college and be more conducive and conducive in the future.

Key word: Sustainable, Residential Colleges and Comfort

1.0 Introduction

Residential college is an area for the placement of students that provides accommodation, food and service. According Alwee et al. (2008), the residential college is a service provided by the university for their student accommodation. In the study by Mat Hassan (2000), the residential colleges refer to accommodation in campus throughout their studies in institutions of higher learning in Malaysia. The function of residential college is to provide services and accommodation facilities, maintaining the quality and nutritional services provided as well as provide a conducive learning (Mohd Tahir et al.2011). In the context of as a comfortable and conducive residence, residential college can influence quality of life for students. According to Mahir Razali et al. (2014) quality of life is a concept that emphasizes the better living conditions.

This statement shows the comfortable residential colleges could have an impact on life of a student. In other studies by Yaacob & Yasak (2008), the initial accommodation includes not only shelter but covers the entire place of learning, accommodation and socialize.

Nowadays, the development of a campus often emphasized on sustainability in every aspect of the faculty building, administration or education centers. However, the development of the residential college with the concept of sustainability characteristic is still uncertainty of its existence. The development of a sustainable campus includes not only the education centre or faculty but also the residential college. Residential college nowadays not only serves as a place to live but also more broadly as the place for studying and to practice the soft skills. According to Jamaluddin (1996), the educational process occurs in a holistic and integrated environment, thus the status of student residential college should be placed on a par with faculty. Planning and design of the built environment such as the construction of residential colleges could not avoid consideration of human construction and existing environmental factors. In the study of Conducive Campus Environmental Design Criteria for Higher Education Institutions in Malaysia (2007), pointed out that the the planning for the construction of the campus is not an easy. It is backed by Abdul Malek and Ibrahim (2013) the aesthetic value, urban and landscape architecture designed and built in line according to human needs for improving habitation. Therefore, a thorough planning with regard to the elements that influence the quality of life and the environment should be studied further developed as a concept of sustainable residential college.

2.0 Issues and Problems

The issue of discomfort live in residential colleges in public universities is the problem that remains to be resolved effectively nowadays. The issue of occupant discomfort in the residential college is proved through research on Universiti Sains Malaysia (USM) residential colleges by Mohd Sari (2003), the issues were related to discomfort in the room of student accommodation provided by USM. Occupant discomfort while in college residence are directly have a negative impact that the deterioration of the quality of life of residents in the period of study. This is further supported in a study by Yaacob & Yasak (2008), that the quality of life of the students while at university partly influenced by place of residence and to formulate some facilities that are provided do not give a good comfort. This statement is proved in the report from the Ministry of Higher Education, Ministry of Higher Education (2012), regarding issues and problems in the aspect of development of college students in the residence which are ;

- a. Aspects of physical space students: did not meet the standards of the Economic Planning Unit
- b. Aspects of basic facilities in the room: quantity and quality of facilities that declined
- c. Support facilities aspects: facilities support provided could not help the aspect of development of the student
- d. Aspects in facility of disabled students: did not complied with national and international standards
- e. Administrative facilities aspect: the need for complex facility, administrative room accordance with the standards

The effect of this discomfort will eventually disrupt the sustainability of life of residents in residential colleges. In relation to sustainable development there are three dimensions of sustainability: environmental dimensions, economic dimensions and social dimensions (Shafii et al. 2013, Hopwood, 2005 & Wheeler, 2004). The concept of sustainable development focuses on environmental, economic and social aspects (Syed Zakaria, 2014). In the context of environmental dimensions in residential colleges, the impact of lack of landscape preparation will lead to risks of natural disasters such as overwhelming heat, floods and landslides. Natural disasters such as floods, fires and landslides are also will cause of discomfort (Abdul Rahman, 2012).

The impact on economic dimensions is a waste of money, energy and time. Financial wastage through renovations and maintenance are high. Buildings that are designed regardless to the will of the occupants, often cause problems especially in terms of modifications (Syed Fadzil, 2004). The renovation is not only waste in terms of financial but it also involves the time needed for its renovation.

Problems in social dimension will occur when the occupants feel discomfort, no tranquility, no reconciliation and reduce the level of motivation and thus provide unhealthy stress in the aspects of learning at residential colleges. Learning requires motivation (Mok, 2011). The main factor that contributes to stress (pressure) of female students is caused by noise, air and water pollution around the study area and causes the student not to concentrate fully on learning (Mustafa et al. 2009).

According to the Ministry of Higher Education Malaysia, deficiencies that exist in the residential colleges provide a direct impact on occupant comfort as well are not project the real image as an institution of higher learning in the socio-cultural environment which is quite unique. Previous studies by Noor (1984), also concluded the facilities provided has not yet reached satisfactory level and should be considered. He also questioned the infrastructure related to the aspects that should be prioritized is the comfort of occupant. Knirk (1979), reviewed the student could not understand or process the information easily if physically not comfortable with the environment. Hence, the needs to develop a Sustainable Residential College in Malaysia, which based on the needs and comfort of occupant carried out in order to improve the quality of life of students and to ensure a greener environment.

3.0 Literature Studies

3.1 Quality Of Life Of The Students In The Residential College

Develop the concept of sustainable residential colleges should examine concepts included in the quality of life especially to the residents of the residential colleges. On Mahir Razali et al. (2014), states a special team of the World Health Organization study the the quality of life in 1993 has defined the quality of life as the individual's perception of their position in the life from the point of culture, norms which they live and also associated goals, expectations, standardization and concerns about himself. While according to the Malaysian Quality of Life, (Economic Planning Unit, 1999) states that the quality of life in Malaysia is defined as encompassing self-advancements, a healthy lifestyle, accessibility and freedom to acquire knowledge and standard of living beyond the basic needs of individuals and their psychological

needs, to achieve the level of social welfare on a par with the country's aspirations. In a study by Mat & Boon (2010) there are three main factors that contribute to the quality of student life in the college residence. Apart from the convenience and safety factor, management factor is crucial factor in ensuring academic excellence and to ensure student satisfaction that staying in the residential colleges. In the context of the residential colleges, the student's quality of life could be improved if the needs and comfort of living in the residential colleges was earned. The role of the residential colleges should be considered very important when providing convenience and welfare of the residents. The quality of residential lives in residential colleges has listed eight aspects to determine the satisfaction of the quality of life of students while staying in the residential college (Said and Ahmad, 2010). namely:

- i. Residential college environments: learning atmosphere, sleep time, familiarity or intimacy, opportunities to meet and interact with others, level of community awareness at residential level, staff level of noise level, level of respect for personal rights and freedom from any form of violation or disruption.
- ii. Facilities and services: In connection with the provision of maintenance services, cleaning services, physical conditions, television services, visiting hours allowed, vending machines, washing machines and study lamps. Facilities for public or shared use are also provided at each level such as television, shelter, toilets and lifts. This facility needs to be maintained by the student as best as possible.
- iii. Staff Services and Student Committee Members: Staff Services and Student Committee Members (AJKM) are also an important aspect in creating a comfortable life in a residential college. Fellows and student committee members in residential colleges are channels formed to represent students if there are any problems..
- iv. Administration office administration: Efficient, friendly and attentive service by college staff is crucial to ensuring that all life-related matters in college are running smoothly.
- v. The whole life experience in a residential college: The experience of staying in a dormitory during school helps many students step into the higher education or workplace. However, when compared with life in the dormitory, living in the residential college is more challenging. If comparisons between individuals who grow up with school-age life managed by parents with individuals living in dorms, life in the dormitory gives more advantage to someone in living at the residential college.
- vi. Supervision and safety: Surveillance and security at residential colleges are need to be taken seriously. This coincides with Maslow's 1957 hierarchy of needs that states that there are five basic human needs in their lives where one of them is requirements in terms of safety.
- vii. Programs and activities carried out: Student activities or programs for sport or recreation after learning to fulfill their leisure.
- viii. Cafeteria Service: Time is very valuable to a student. This is because they need to continue the time to do revision. The cafeteria features a well-managed and can provide food services quickly and efficiently.

Residential college that comfortable for occupant could be improved their concentration while studying especially when they need a tranquil and peaceful place to study. Anything that critical for the residential colleges are always be able to provide comfort to the student through the facilities such as computer room, resource center, a revision and so on. In Rinn (2004), most researchers have been studying the effects of life in campus compared to life outside the campus found that living in campus residence gives a positive impact in the academic and social development. The convenience of using the facilities provided is important especially related to student's academic. Discomfort not only be a distraction during the learning process but also able to put pressure on the occupant's life that eventually led to the deterioration of the quality of life.

3.2 The Concept Of Sustainable Residential College

Concept of sustainable development of residential college is a concept which is based on sustainable development. Shafii, Seow and Mat Yassin (2013), the underlying concept of Sustainable Residential College that led to the well-being of its occupants. This concept is important because it leads to improved quality of life, environment and contribute to student's academic excellence. According to Hambug (2008), developments are defined as the subject of development, achieving advancements and development. While sustainable refers to a situation that unchangeable, remains permanent and, therefore, the concept of sustainable development is development that maintains natural resources and ecosystems so as to mutually benefit the future generations. The interpretation is made based on a research of the perspective on sustainability itself. However, generally sustainable development was defined as development that meets present needs without compromising the ability of future generations to meet their own needs by the Brundtland Commission in 1987 (Wheeler 2004). Although there are slight differences between the definition and understanding but it points to one direction which is to ensure a better human life in the present and the future. Sustainable development can be seen through Module Triple Bottom Line (TBL) Abas (2014).

Developing a sustainable residential college concept requires a study of the dimensions of sustainability and its impact in the context of the construction of a residential college. The following is related to three dimensions of sustainability:

- i. **Dimensions Environment:** The environment is one of the aspects that affect the quality of human life. In the event of any disruption to the environment ecosystem, it will create problems to humans. Problems arise such as large floods, landslides and disease outbreaks. In the context of residential colleges, such contamination will occur if residential colleges are not planned, developed and managed carefully. Issues such as extreme heat, floods, landslides and poisoning may occur in the future and will affect the safety of the occupants. Development of residential colleges that consider aspects of environmental sustainability able to avoid disasters caused by human actions. Therefore, in the future every residential college must ensure that the development does not affect the environment to ensure the safety, health and harmony of life.
- ii. **Economic Dimensions:** In economic dimensions, sustainable development involves aspects such as finance, spending, natural resources, human resources, poverty

eradication and so on. In the context of the development of the residential colleges, the economic dimension involves the use of resources such as water, electricity, finance and so on involving the operating costs of the residential colleges. Economic dimension factors do not achieve sustainability when wastage in excessive use of electricity, excessive use of water and high maintenance costs.

- iii. **Social Dimensions:** Social dimensions are related to the harmony of a community within a residential or placement area. In the context of social dimensions in the residential college, it is a student housing community that involves a variety of backgrounds but has the same goal of achieving excellence in academic and self-development. Students living in residential colleges are community students who need the comfortable and satisfying atmosphere or environment especially when it comes to learning related activities, personal development and relaxation.

4.0 Methodology

4.1 Population and Survey Sample

This research involved only seven public universities (UA) in Malaysia, Universiti Sains Malaysia (USM), Universiti Putra Malaysia (UPM) and Universiti Kebangsaan Malaysia (UKM), which represents research universities, Universiti Tun Hussein Onn Malaysia (UTHM), Universiti Teknikal Malaysia Melaka and Universiti Pendidikan Sultan Idris (UPSI) representing focused universities and also Universiti Teknologi Mara (UiTM) represents the comprehensive university. Each university submitted is based on the category of universities determined by the Ministry of Higher Education (Ministry of Higher Education, 2007) and rely on approval the participating universities to conduct research. The study only focused on the comfort of the rooms.

Sampling is an taking of part of a population. It is a good method to reduce costs and describe the entire population. As it is known, the sample is the source for the data. According to Mohd Noor Mohamad (2010), said sample is a part of the population without regard to whether it can be representative of the population or otherwise. Referring to Table 1 for this research the whole population are 13,760 was full-time students of public universities, which comprises seven residential colleges of public universities. The number of samples is proposed in the Krejcie and Morgan table (1970) were 2,199 respondents, while the actual number of samples taken from the field were 2,874 respondents. Universiti Teknikal Malaysia Melaka (UTeM) has the highest number of respondents with a total of 676 respondents, then followed by Universiti Tun Hussein Onn Malaysia (UTHM) with 634 respondents and Universiti Putra Malaysia (UPM) with 386 respondents. The lowest number of respondents were from Universiti Pendidikan Sultan Idris (UPSI) with a total of 241 respondents. In this study, the number of samples taken each residential college of public university is not standardized according to public university residential college population respectively

Table 1: Number of samples by University

University	Number of Residents	Sample	Sample Fields	Percentage (%)
Universiti Teknologi Mara (UITM)	3500	346	301	87
Universiti Putra Malaysia (UPM)	2260	331	386	116
Universiti Kebangsaan Malaysia (UKM)	1000	278	307	110
Universiti Pendidikan Sultan Idris (UPSI)	1000	278	241	87
Universiti Sains Malaysia (USM)	2000	322	329	102
Universiti Teknikal Malaysia Melaka (UTEM)	2000	322	676	210
Universiti Tun Hussein Onn Malaysia (UTHM)	2000	322	634	196
Total	13760	2199	2874	130

4.2 Research Instrument

This study used a questionnaire which has two parts, Part A includes items for student demographic and Part B and related with occupant comfort in accommodation space design.

Part A: Respondent's background: The first parts of the questionnaire are the respondents were initiated with relevant demographic information. This section uses the closed question form and generally without involving profound personal information. There are five items in this section.

Part B: This part is a study on the comfort of the occupants about room occupants in the residential colleges. There are 11 items in this section. Items in this section form statement and the respondent must select an answer to scale renovation Likert 5 points according to the perception of each of the rooms were occupied, which is very uncomfortable (STS), uncomfortable (TS), moderate comfort (SDS), comfortable (S) and very comfortable (SS). Scale selected by researchers because Likert scale is said to have a high degree of reliability and have an advantage over other scales (Rajuddin & Eric, 2010). But it also supported in Minghat & Mansor (2011), has listed the advantages of Likert Scale which is the provision more simple, this method is based on empirical data related subjects feedback compared the subjective opinions of the judges and these methods produce more scale the same type and increase the possibility of a unit of attitude measured and this can increase the validity and reliability. Cronbach alpha values for determining the reliability of the item B is 0891. According to Hussein, Ali & Zamzuri Noor (2014), the coefficient of 0.8 or higher showed good reliability of measuring instruments.

5.0 Results

5.1 Respondent Background

The number of respondents involved in this study was 2874 people. There are five items in the background of the respondents surveyed in this study, namely regarding gender, age, race, education levels and duration of staying in the hostels. Referring to Table 2 shows the percentage of female respondents was the largest which is 68% (1967 respondents than male respondents). While the age of the respondents on survey indicated that respondents aged

between 20 years to 22 years was the largest percentage which 50.4% (1450 respondents). Malay race are largest percentage in this study, namely 83% (2388 respondents). The results showed that undergraduate students are the highest percentage in the study group which is 92% (2633 respondents). Duration students live in residential colleges showed less than a year is the largest percentage in this study which 53.2% (1529 respondents).

Table 2: Respondents Background

Item		Total (%)
Gender	Male	907 (32)
	Female	1967 (68)
Age	Less than 20	1128 (39.2)
	20-22	1450 (50.4)
	23-25	257 (9)
	26-28	29 (1)
	29 above	10 (0.3)
Race	Malay	2388 (83)
	Chinese	295 (10.2)
	Indian	82 (2.8)
	Others	109 (3.8)
Level	Diploma	183 (6)
	Undergraduate	2633 (92)
	Masters	47 (1.6)
	Phd	11 (0.4)
Duration Stay in Hostels	Less than 1 year	1529 (53.2)
	1-2 Years	933 (32.4)
	3-4 Years	348 (12.1)
	5-6Years	54 (1.9)
	7 Years and above	10 (0.3)

4.2 Comfort Of The Room In Residential College

Referring to Table 3 there are six items that are used as an indicator to assess the comfort of occupier room physical space in residential college. Item room environment comfort shows that residents are comfortable with the amount on the scale of 1569 the majority of respondents (54.6%). Room size item indicates the majority of residents choose comfortable scale as the highest level of comfort with a total of 1351 respondents (47%) and very uncomfortable scale is the scale chosen by respondents with the lowest number of 38 respondents (1.3%). Items living room had a comfortable majority on a scale with 1176 the number of respondents (40.9%), followed by medium scale uncomfortable with the number of 912 respondents (31.7%). Ventilation for the highest number of items on the scale of comfortable with the amount of 1 262 respondents (43.9%), followed by scale medium comfortable with 715 respondents (24.9%) and the lowest selection is scale very uncomfortable 78 respondents (2.7%). Lighting in the

room is also seen to have a majority comfortable on the scale with 1271 the number of respondents (44.2%). The design shows the scale of the room occupant comfort is the highest number of 1327 respondents (46.2%) while the scale is very uncomfortable to be at the lowest selection with 54 respondents (1.9%).

Table 3 Parts Comfort Against Occupant's Physical Room Space

Item	STS	%	TS	%	SDS	%	S	%	SS	%
Room Environment	33	1.1	88	3.1	489	17	1569	54.6	695	24.2
Room Size	38	1.3	130	4.5	632	22	1351	47	723	25.2
Living Room	71	2.5	224	7.8	912	31.7	1176	40.9	491	17.1
Ventilation	78	2.7	220	7.7	715	24.9	1262	43.9	599	20.8
Lighting	57	2	182	6.3	659	22.9	1271	44.2	705	24.5
Design	54	1.9	156	5.4	736	25.6	1327	46.2	601	20.9

Table 4 shows the items of comfort against the occupant's room interior equipment containing five items. Convenience items for bedding sets (pillows, mattresses, blankets) shows the scale comfortable as the majority of the total 1121 respondents (39%) and followed by medium comfortable with scale of 898 respondents (31.2%). Chairs facilities provided were comfortable is the highest on the scale by the number of respondents are 1365 (47.5%). Study table shows the highest number on the scale comfortable with the amount of 1368 respondents (47.6%). For the convenience of the closet that provided residential colleges showed the majority choose comfortable with the scale of 1291 respondents (44.9%) and lowest selection is on the scale which is not comfortable with 65 respondents (2.3%). Item shoe rack provided results the highest on the scale which is comfortable with the amount of 1158 respondents (40.3%).

Table 4 Parts Comfort Against Occupant's Room Internal Equipment

Item	STS	%	TS	%	SDS	%	S	%	SS	%
Bedding Set Facilities	79	2.7	235	8.2	898	31.2	1121	39	541	18.8
Chairs	54	1.9	121	4.2	658	22.9	1365	47.5	676	23.5
Study Table	48	1.7	117	4.1	573	19.9	1368	47.6	768	26.7
Closet	65	2.3	172	6	615	21.4	1291	44.9	731	25.4
Shoe Rack	193	6.7	220	7.7	701	24.4	1158	40.3	602	20.9

6.0 Discussion

In this study, overall all of the items contained in the comfort of the room physical space and the comfort of the occupant against the internal equipment room the occupant have the majority on the scale which is comfortable. These results indicate that the provision of the design, space and equipment in the occupant's room is at a comfortable level and satisfying.

However, there is still a small part of the occupant had discomfort. Discomfort small part of the occupants can be seen on the scale uncomfortable and very uncomfortable. Although the majority choose on the scale the occupant is comfortable, it does not mean that the facilities and equipment provided must not be repaired or improved the quality. Providing the room comfortable space and conducive is important. According to Abdullah (2011), which viewed bedroom serves as a place of learning are supposed to be conducive to strengthening the motivation of students in revising and reading books. In the context of the residential colleges, where bedrooms are unable to meet the needs of students it will be difficult for the student's revision session in residential colleges and student enthusiasm and motivation to be successful declined.

In developing a comfortable residential college, the design of the physical space of the rooms meets the needs of the occupant should be given priority. Without design according to function will cause problems for the occupant in the future. According to Hanafi (1999), usually the spaces of a building that was designed to have specific functions and can be known but the feeling about the spaces those add to the sensitivity of the person to function space. In this research, comfort of the occupants of the public university residential college on the rooms physical space available was centered on a comfortable level based on the findings. Therefore, even a residential college developed with the purpose of student accommodation but if in terms of its physical design is not compatible with the occupants activity will trigger discomfort to the occupants and eventually trigger a decline in the quality of life of residents.

Interior equipment of the rooms such as a desk furniture, chairs, mattresses and bedding can affect the lives of the occupants. The importance of equipment in a room on the lives of its occupants without a well-functioning equipment will cause problems in the daily activities of the occupants. Study desk and chairs that do not meet the needs and uncomfortable would have a negative impact to learning. According to Salina Tukimin (1992) in Mohamed Zakuan (2003), students could not concentrate completely on the teaching and learning sessions that conducted if they uncomfortable with the equipment such as table and chairs that are available. This was supported by Osman (2003), tables and chairs are not only important for work purposes only but in the process or learning activities it also were a major element. This statement clearly shows that the equipment in the room where do have an effect towards occupants on the learning process.

In addition, the internal equipment of the rooms used for resting and sleep also correlated with quality of life of occupants. Amenities such as beds, mattresses and pillows that are not comfortable would disturbing the occupants to rest or sleep and would be able to affect the health of occupants and motivation. According Hidie (2013), sleep is needed by every human being to make sure the body gets enough rest; a person must get quality sleep, that is good sleep pattern. In fact, the lack of sufficient rest or sleep would affect daily activities. In the study by Japardi (2002), a sleep disorder that prolonged would lead to changes in biology, decreased stamina and decreased work performance, irritability, stress, lack of concentration, fatigue, which could ultimately affect the safety of themselves or others. In this research, comfort of occupants on the room interior equipment centered on comfortable level with all items shows that the scale of comfortable is preferred by the majority of occupants. Therefore,

it is important for universities to develop a residential colleges that with accommodation features that meet the needs of occupants as university students. According to Syed Fadzil (2004), that the building was designed without taking into the needs occupants, often creates problems, especially in terms of renovation.

Residential college facilities developed by the university to provide the student for their placement. This important provision are needed especially for students who live far away from the university. However, deficiencies that exist in the residential colleges give direct impact on the occupants' comfort. Although some studies have shown occupants are on the scale of comfortable for all items and only the minority only shows that they are in uncomfortable situation. This result does not mean that the facilities in good condition at all times. Improvements to improve the quality of the facilities provided in college residence and equipment should be done continuously. Mat & Boon (2010) residential college was a very important place to achieve the goal of producing students who are not only excelled academically, but with a variety of skills in all areas. Therefore, the development of the concept of the sustainable residential colleges through the preparation of guidelines on the design concept of the sustainable residential colleges in Malaysia would ensure the development of the residential colleges in the future with sustainability that emphasizes occupant comfort as the ultimate goal and eventually would help occupants achieve excellence in universities.

7.0 Conclusion

Residential college nowadays is a student placement center that is capable of providing various facilities and services to support the various activities of the occupants. The comfort of staying in a residential college is an important aspect to be given attention. Without the comfort of facilities provided will adversely affect the occupants. The comfort of staying in accommodation room of residential college is able to provide motivation and inspiration to occupants to achieve excellence. Overall comfort the accommodation rooms in the public universities residential colleges in Malaysia are at the comfortable level. Comfort is important.

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