

Walkability in Campus, Case study of University Technology Malaysia

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Specially dedicated to my beloved father, mother

and my husband

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ABSTRACT

Education is an endeavor that is highly sensitive to location. The physical environment of a campus does much to stimulate and support the mind, body, and spirit of those who study, live, and work there. The concept of 'Walkability' provides a primary principle of sustainability in urban design that anchored people's perception, influence their perspective and behavior. This study focus on the improvement and enhancement of the quality of campus environment in terms of walkways and open spaces. It express the relationship of physical infrastructure with the walkability, the impact of open spaces on walkable area. The objective of this research is to study about the principles of walkability and to identify the problems of walkability in UTM campus. The scope of this dissertation is limited to the surrounding area of library in UTM. University Technology Malaysia has been chosen as a case study for this dissertation. The research methods used consisted of a questionnaire and behavioral observation. A total of 100 respondents were included. The resulting data were statistically analyzed. The results obtained by questionnaire were supported by the findings obtained from other techniques (behavioral observation). The research found that many physical infrastructure problems decrease the student's willing to walk. The results show that way which has more open space through the walkways, appropriate street furniture for activities such as seating and places for refreshment, gathering with friends or using wireless internet is used more than the other ways. This findings indicated that a campus with more open space tends to create a sustainable pattern of life on campus.

ABSTRAK

Pendidikan adalah satu proses yang berterusan dan amat sensitif terhadap lokasinya. Persekitaran fizikal di dalam kampus memainkan peranan penting dalam merangsang dan menyokong minda, badan dan semangat kepada mereka yang menjalani kehidupan sebagai pelajar dan pekerja di sana. Konsep '*Walkability*' menyediakan satu prinsip utama dalam reka bentuk perbandaran yang mengutamakan persepsi manusia, mempengaruhi perspektif dan juga tingkah laku mereka. Kajian ini menumpukan mengenai penambahbaikan dan peningkatan kualiti alam sekitar di dalam kampus dari segi laluan pejalan kaki dan ruang lapang. Ia menerangkan hubungan diantara infrastruktur fizikal dengan '*walkability*', iaitu impak ruang lapang terhadap kawasan '*walkable*'. Objektif kajian ini adalah untuk mengkaji berhubung prinsip-prinsip '*walkability*' dan mengenal pasti masalah '*walkability*' di dalam kampus Universiti Teknologi Malaysia (UTM). Universiti Teknologi Malaysia (UTM) telah dipilih sebagai kajian kes untuk disertasi ini. Skop disertasi ini adalah terhad kepada kawasan di sekitar perpustakaan di dalam Universiti Teknologi Malaysia (UTM). Kaedah penyelidikan yang digunakan adalah terdiri daripada soal selidik dan pemerhatian tingkah laku. Sebanyak 100 responden telah dipilih didalam kajian ini. Data yang dikumpul dianalisa menggunakan analisis statistik. Keputusan yang diperolehi melalui soal selidik telah disokong oleh penemuan yang diperolehi daripada pemerhatian tingkah laku. Kajian ini mendapati bahawa jika terdapat banyak masalah didalam infrastruktur fizikal, ia akan menyebabkan pelajar tidak berminat untuk berjalan kaki melalui infrastruktur tersebut. Keputusan analisa menunjukkan bahawa laluan yang mempunyai ruang yang lebih terbuka di sepanjang laluan pejalan kaki, mempunyai perabot jalan yang sesuai untuk aktiviti-aktiviti seperti tempat duduk dan tempat untuk berehat, berkumpul dengan kawan-kawan atau menggunakan internet tanpa wayar, digunakan oleh pelajar sebagai laluan lebih kerap daripada laluan lain. Penemuan ini menunjukkan bahawa sebuah kampus yang mempunyai banyak ruang yang terbuka lebih cenderung untuk mewujudkan satu corak kehidupan yang mampan di dalam kampus tersebut.

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CHAPTER 1

1.1. INTRODUCTION

Education is an endeavor that is highly sensitive to location. Students and alumni respond all their lives to memories of the place that nourished their intellectual growth. The physical environment of a campus does much to stimulate and support the mind, body, and spirit of those who study, live, and work there.

Universities today bear the same responsibility to confront environmental challenges as other institutions, municipalities, and countries around the world, but they can make unique contributions through research, teaching, and student initiatives. Universities also have many opportunities to practice sustainability, through such activities as campus operations and the housing, feeding, and transporting of people.

The term university campus refers to an institutional space that is designed for use in the education and residence of college students (Isiaka & Siong 2008) and includes the building and other physical elements found in the associated area (Shuhana et al. 2007b). The establishment of the university campus usually occurs in stages according to its current needs for growth and development (Walker & McGough 1962). Existing university campuses require further development from time to time, based on the objectives that must be achieved. The physical development planning of a campus can be considered to be successful if the project goals are achieved.

Since the Earth Summit sessions in 1992 and 2002, the issue of sustainability has become a critical topic of discussion (Abdul Ghani & Aziah 2007). Because they are a center of knowledge, universities around the world have become increasingly concerned with this issue

(Beringer et al. 2009). Accordingly, many universities have begun to promote strategies for creating sustainable campuses through education and design projects (Davis & Wolksi 2009).

The Sustainable Campus Design Guidelines serve as a high quality and trendsetting example for a sustainable development of urban space.

Universities in Malaysia expressed a commitment to implement sustainable practices when only a few universities were moving toward creating a sustainable campus. However, there are several weak aspects in campus physical development planning that has resulted in the failure to create an environment that offers a conducive environment for learning and living (Shuhana et al. 2007a). In addition, campus physical development planning in Malaysia is less sensitive to change and does not satisfy the needs of students on campus, even though they are the primary 'clients' in campus (Mohd Tajuddin 2003).

In this research, a sustainable campus is defined as a campus characterized by operations, social and economic, which promote the long term survival of the environment and our own social structures. The purpose of this research was to examine existing campus physical development plans and their impact on campus life, especially for students.

The concept of 'Walkability' provides a primary principle of sustainability in urban design that anchored people's perception, influence their perspective and behavior. People become more engaged with the surrounding environment and the community. The feeling is easily detectable in a residential community. Whilst residents of a city center may have something to say on this matter, the general public use the center regularly for reasons that are as important as to anyone else to the city, the city must permits or provides the necessary environment. Walking is the pre-requisites of that environment.

Good walking experience must involve safety, comfort and interest. It is important to have good and clean pedestrian walkways; crossings, elevation and the basic utilities (to cater for the various sections of the community) so that people can walk in that area and do not worry for their safety while they are walking along the road. Cullen (1978) explored the element of serial vision that affects human perception and behavior as well as allowing psychological stimulus while walking. Often, many contemporary towns do lack this aspect.

People walk the city for different reason; leisure, business, passing through, etcetera, nonetheless the key factor remains how 'walkable' a place is to encourage people to always use and enjoy the walk. A 'walkable' city does not only offer an efficient and cheapest transportation mode, but put the urban environments back on a scale for the sustainability of resources (both natural and economic) and lead to increased social interactions.

1.2. PROBLEM STATEMENTS

According to previous survey in UTM which is shown in Appendix A, although most of all personal trips are twenty or less minutes – a reasonable distance to walk, but current rates of walking for transportation are low.

1.3. OBJECTIVES

The goal of this dissertation is to make our 'common' dream come true, which is to create a satisfactory planning of the pedestrian environment for future developments for coming students to enjoy.

Key objectives include:

1. To determine the principles of walkability
2. To identify the problems of walkability in UTM
3. To developing a guideline for UTM campus

1.4. RESEARCH QUESTION

1. What are the principles of walkability in campus?
2. What are the physical conditions of the streets that would influence and encourage walkability?

1.5. SCOPE OF STUDY

1.5.1. To appraise the concept of walkability and its usefulness for an urban center.

1.5.2. To understand the relationship of public space and walkability in campus. Thus in the study area (University technology Malaysia) of this dissertation, this relationship will be surveyed and analyzed to establish whether the proposed design in chapter 5 can make

the place walkable. The key elements are the physical amenities, the building form and material, the use of public places, focal points.

- 1.5.3. Due to time constraints, we have delimited our study population to students living in residence on the campus of UTM. These students are easier to access, and therefore data could be collected in a more time effective manner.

1.5.1. STUDY AREA

University technology Malaysia is located in suburban of Johor Bahru city. The UTM campus is a mountainous area and its height is between 12 meters and 150 meters from sea level. Located in the middle of the area of UTM is a number of small hills, and there is a small river which is the recreational lake and river in the university. Because of the existing hill in the centre of the university campus, the concept of centralization development was applied. (Arash Moradkhani Roshandeh, 2009)

The current UTM master plan is based on radial planning. The main administration and faculty are mostly located in the inner circle of the whole campus. Most of the student's hostels are located far away (more than twenty minutes walks) from the inner circle.

The study area of this dissertation is the inner circle of the UTM campus. The library and mosque and the faculties are located around it. Actually there are some roles in this area. Student vehicle-free policy is strictly applied within the inner circle (Lingkaran Ilmu) of UTM during office hour. But the condition of this area doesn't respond to the needs of students.

1.6. RESEARCH FRAMEWORK

The thesis comprises of 5 chapters. Chapter 1 - will comprise an introduction to the research, problem identification, research objectives and research question and research methodology and the study area.

Chapter 2 - will cover the literature review on the subject matter of 'walkability' and related concepts to the subject matter under study. This chapter will provide the theoretical framework that provides the 'content' input of the study.

Chapter 3- will comprise research methodology of this thesis.

Chapter 4 - this chapter deals directly with the study area which include site description and history, several aspects of site investigation and data collection including physical survey of sidewalk conditions, perception survey (face to face interviews) with the students coming to the site (local and foreign), observation survey on public places and pedestrian pathway . The information and data will be tabulated and analyzed.

Chapter 5 - this chapter will highlight the basic findings of chapter 4 and will proceed to propose the relevant improvements and changes as seen appropriate by the author. The basic elements of the proposals are highlighted in the form of schematic and conceptual plans and drawings rather than a detail architecture forms.

1.7. RESEARCH METHODOLOGY

The research methods for our study included a literature review self-administered survey and an observational analysis of walking infrastructure and habits on the campus of University technology Malaysia to enable the creation of a Campus Walkability Map.

According to scope of study that choose the students who live in campus, these residence students are an appropriate section of the population because most residence students walk on campus every day and are very familiar with their campus. A survey was chosen as the method to collect this information because it is an efficient way to collect information about the prevailing opinions of a rather large population. In addition, the data return period on a self-administered survey is short, which is a necessity due to the limited timeline of our research project.

However, there were some cases where it was difficult to stop students for an interview. In these cases, other students in the area, such as pedestrians waiting for a ride were interviewed.

Both the field walkability survey and the pedestrian interview survey were conducted from 7:30 to 10 am and 3 to 5 pm to capture the morning and afternoon peak-hour pedestrian movement and also the observation was conducted at night time.

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