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BARRIER FREE CAMPUS LANDSCAPE FOR STUDENTS WITH DISABILITIES

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Abstract

This paper discusses the theoretical aspects of disability and its relationship to campus planning. It presents the theoretical frameworks consist of the definition of disability and people with disabilities (PwDs); types of disabilities in built environment which cover issues and challenges faced by disabled peoples; outdoor spaces of campus planning and outdoor campus environment from the aspects of landscape design. This paper focuses on the barrier free campus landscape design in campus planning and reviews the needs of Student with Disabilities (SwDs) as part of PwDs in terms of their accessibility, safety, usability, and integrated design, in order to create a barrier free campus environment. The paper provides a platform to discover the needs of the disabled students, especially in the campus environment, based on the type of disabilities.

Keywords: people with disabilities (PwDs); barrier free campus; universal design; campus environment; Student with Disabilities (SwDs)

1 INTRODUCTION

Disability is a global concern. It affects individuals everywhere in the world and can happen to anyone at any stage of life. Generalizations about “disability” or “people with disabilities” can be misleading. It is stated in the World Health Organization (WHO), that disability is a term to describe ‘any restriction or lack (resulting from any impairment) of ability to perform an activity in the manner or within the range considered normal for a human being’ (WHO, 2011). Based on statistics by the United Nation (UN) 2011, the current estimates indicate that 15 per cent of the world’s populations are living with some form of disability, or approximately over one billion people. With this result of global trends in population ageing and a global increase in chronic health conditions, the incidence of impairment and disability among the general population is expected to increase. Basically, PwDs have diverse personal factors with differences in gender, age, socioeconomic status, sexuality, ethnicity, or cultural heritage. Each has his or her personal preferences and responses to disability. The specific objectives of this paper are:

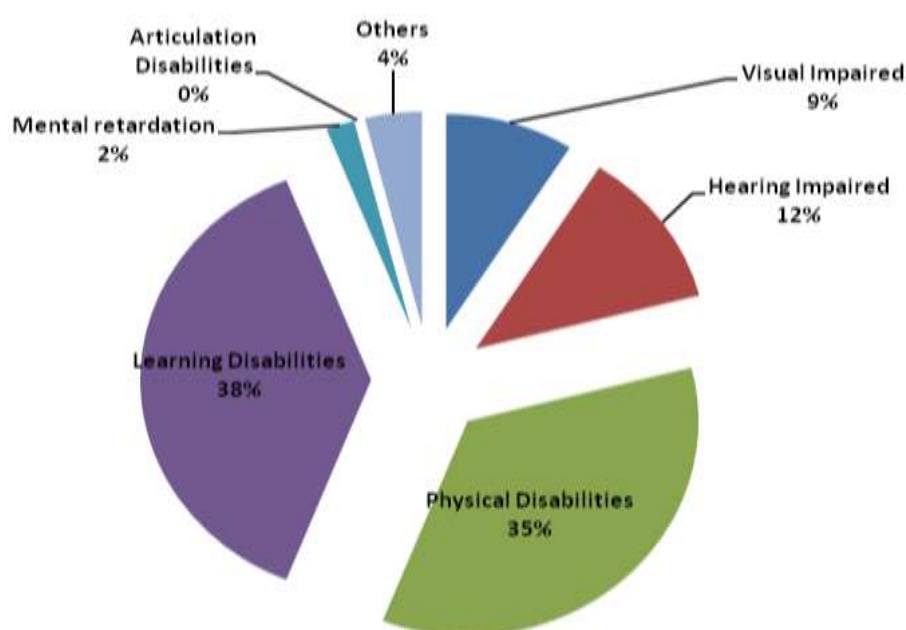
- i) To understand the type of disabilities, issues and challenges of PwDs/SwDs in built environment;
- ii) To study the needs of PwDs/SwDs in campus landscape planning and design; and
- iii) To promote a barrier-free campus concept.

2 TYPES OF DISABILITIES IN BUILT ENVIRONMENT

PwDs are diverse and heterogeneous, while stereotypical views of disability emphasize wheelchair users and a few other “classic” groups such as blind people and deaf people. Increasing rates of disability in many places are associated with increases in chronic health condition such as diabetes, cardiovascular diseases, mental disorders, cancer, and respiratory illnesses and injuries (WHO, 2011). Global ageing also has a major influence on disability trends because there is higher risk of disability at older ages. The environment has a huge effect on the prevalence and extent of disability, and on the disadvantage faced by persons with disabilities.

Disability encompasses five types, namely wheel-chair users, hearing impairment, visual impairment, physical disabilities, and learning disabilities. Different types of disabilities

require different type of needs. Thus, it is important to ensure that all of them are given the same facilities and amenities as others. The Department of Welfare, Malaysia has divided the percentage of the population based on the specific disabilities in order to obtain the number of the PwDs that have specific disabilities in Malaysia. Figure 1 shows the percentage of PwDs based on specific types of disabilities and we can see that the physical and learning disabilities are leading number in the population of PwDs in Malaysia followed by hearing impaired, visual impaired and so on. Therefore, this shows that the needs of PwDs, in terms of facilities and education in society, must be taken into consideration in order for them to live in a better living environment.



Percentage of Disabilities in Malaysia according it types

Figure 1: Percentage of registered PwDs based on types of disabilities in Malaysia 2011

(Source: Department of Welfare, Malaysia, 2011, retrieved from:

http://www.jkm.gov.my/index.php?option=com_jdownloads

&Itemid=314&task=finish&cid=245&catid=41&lang=ms 30th July 2012)

The levels of disabilities vary where each of level needs different aids and facilities. Below are the categories of the degree of disabilities:

- Mild: a person does not need assistance and has no difficulty with core activity tasks, but uses aids or equipment.
- Moderate: a person does not need assistance, but has difficulty with core activity tasks.

- Severe: where a person sometimes needs assistance with core activity tasks, has difficulty understanding or being understood by family or friends, or can communicate most easily using sign language or other non-spoken forms of communication.
- Profound: where a person is unable to perform self-care, mobility and/or communication tasks, or always needs assistance.

The categories of degrees of disabilities are based on limitations to core activities in terms of communication, mobility and self-care. Therefore, this will determine the types of facilities or assistances required by them in order to ease their daily lives.

2.1 Issues and Challenges Faced by Disabled People in Built Environment

People need facilities and amenities as they enable them to access spaces. Thus, they need them ensure convenience in utilizing outdoor spaces. In the context of built environment, physical features are important criteria that need to be included in the design phase. This will ensure the mobility of people to move around since it is related to the easiness of people's movement. This can be expressed by a number of indicators referring to the characteristics of walking journeys, such as frequency, purpose, length or duration. A good mobility will ensure continuity of movement since it makes the link with other pedestrian systems as well as can ease people's movements.

Ruzita (2011) states that architectural features can create barriers to PwDs especially. Figure 2 shows some examples of physical features in outdoor environment that can be hazardous for PwDs since they do not provide the facilities for them to use or to be aware the hazards. This will influence the level of accessibility to PwDs since they require mobility aids to help them as well as spaces for them to incorporate within it.



Figure 2: Examples of physical features (gutter and stairs) which can gives limitation to PwDs and create hazard to them

Apart from that, in built environment, public accommodations of transport systems and information are often inaccessible. Lack of access to transport is a frequent reason for a person with a disability being discouraged from seeking work or prevented from accessing health care. Other than that signages can also create problems for people, especially disabled people. This happens due to the placement related to the viewing angle and the font of the signage which sometimes cannot be seen or read. The colour of the background sometimes hinders the information of signages. Other than that, protruding objects also create hazards for PwDs, especially visual impaired people (Figure 3).



Figure 3: Protruding objects that are hazardous for visual impaired people

Even in countries with laws on accessibility, compliance in public buildings is often very low. The communication needs of PwDs are often unmet. Information is frequently unavailable in accessible formats, and some PwDs are unable to access basic information and communication technologies, such as telephones and televisions. Besides that, PwDs have a right and freedom to work and get productivity in their live. Samsiah (2008) states that the employment of PwDs should be based on their abilities and not their disabilities. Therefore, disabilities can be overcome by specialized support service, assistive devices or job modifications and other accommodations in order to help PwDs in working environment.

3 OUTDOOR SPACES OF CAMPUS PLANNING

A campus can also be considered as a city consisting of elements that are highly interdependent. It has been highlighted by Alshuwaikhat and Abubakar (2008) that universities or campuses can be regard as ‘small cities’ due to their large size and population. Thus, the paper provide a fundamental understanding on campus planning particularly on the needs of PwDs/SwDs in outdoor spaces in order to create a barrier free campus environment.

It has been proved that proper campus planning and design with sustainable concept and approach helps to create an accessible environment for PwDs/SwDs.

According to Philips (2007), campus planning is a subset of urban planning which combines multiple environmental designs and planning disciplines. Like other community environment, a campus consists of the landscape, building and activities that occur therein. From an Islamic perspectives, campus physical planning can be classified as recommended or '*Mandub*' in built environment. Spahic (2009) states that "*Mandub buildings*" refer to recommended building activities and buildings, such as markets, schools and other learning facilities, governmental buildings and institutions, bridges and recreational facilities. These facilities provided are not only meant to meet the outlined criteria or requirement but is more towards '*ibadah* (worship) which is to facilitate, foster and stimulate people to worship (Spahic, 2012). This has also been supported by Ismawi (2009) who further explains that any architectural and environmental design philosophical frameworks should involve the Islamic approach which related to the accessible of an outdoor space for all people including PwDs/SwDs to move.

3.1 Outdoor Campus Environment from the Aspect of Landscape Design

In theory, landscape design acts as a problem solving process by enriching the qualities of nature with human landscape preferences. According to Williams and Tilt (2006), landscape design is the art of developing property for its greatest use and enjoyment. They add that effective landscape design is also a science because it involves understanding the environment around our home and selecting plants that perform well in that environment. This view is supported also by VanDerZanden and Rodie (2008) who state that landscape design blends arts with the environmental, physical and biological of sciences which mainly focus on outdoor space. They also further explain that well-defined landscape space can enhance the quality of living areas which meet peoples' preference. In either case, a well-conceived landscape design, properly installed and well maintained, adds value to property and enhances the quality of life. Thus, landscape design can create a sense of place to the area. Besides that, they also state that landscape design is not only limited to plants material only. It also focuses on the hardscape that complement with plants in order to create a successful design.

Millions of people live and work on college campuses every day. The environment they dwell in and interact with is essential to their quality of life and health. There is no doubt that campus landscape is of great importance to students, faculty, and staff on campus. Boyer's study (as cited in Waite and Hough, 2012) shows that about 68% of high school student made their choices of institutions based on the appearance of campus. Thus, this shows that the appearance of campus is highly influential on students, faculty, and staff recruitments.



Figure 4: Outdoor environment of Brown University creates a non-verbal communication for campus users

(Source: http://brown.edu/Facilities/Facilities_Management/accessibility/accessibility.php, retrieved on 20th July 2012)

3.2 The Importance of Campus Landscape

However, in the past, the design of campus landscape spaces have been overlooked or treated as a leftover of buildings, even though campus landscape spaces are more than the “faces” of colleges. With more and more colleges and universities expanding and redesigning their landscape spaces, the design of campus landscape space has gained more recognition in the recent twenty years. Zulhanif et al., (2011) states that, there are three important elements in a campus, namely the buildings, outdoor spaces and support elements, such as circulation system and utilities.

Outdoor space in campus planning can be defined as the surroundings of buildings which include the landscape. As campus context has become increasingly developed in the last 40 years, campus landscape basically has assumed new meanings. Campus landscape has become a naturalistic, pedestrian oasis in the context of expanding development, roads and

parking lots. Rather than being a symbol of human settlement of nature, it has become a symbol of the rapidly disappearing natural environment and our attachment to it.

Landscape and physical environment act as means of communication to people since they send messages directly and indirectly to people who use them (Steinfeld et al., 1977; Waite and Hough, 2012). According to Suhana et al., (2007), campus landscape can create a sense of juxtaposition, scale, climate responsiveness and centralized. Thus, it creates cognitive mapping in people which can help them navigating the space. There are several important aspects of campus landscape as follows:

- a) It creates unity in designing the building and its surrounding since it connects the open space and the building (Suhana et al, 2007)
- b) Space definition; landscaping can basically defined as a space to create a set of psychological boundaries which help in 'wayfinding'.
- c) Influence student learning process.

Besides that, Zulhanif et al. (2011) conclude that elements of landscape are important in creating a comfortable campus planning. Thus, it is important to ensure that the campus is accessible to everyone.

DISCUSSION: TOWARDS A BARRIER-FREE CAMPUS LANDSCAPE FOR SwDs

The concept of universal design (UD) has been used widely in a variety of design fields such as landscape design, architecture, engineering, and product design, since its conception and development by Mace in 1985 (Afacan, 2011). In general, universal design emphasizes the proactive integration of accessibility and usability to products and environments as fundamental constructs of design itself. Iwarsson and Stahl (2003) state that the term UD implies that the design of buildings, vehicles, or the environment, for example, takes into account that needs of a diverse population rather than just an able-bodied one, and includes the interests of not just those with physical and/or intellectual impairments but also those of the elderly, children as well as adults, and people of diverse ethnic and national backgrounds (Figure 5).

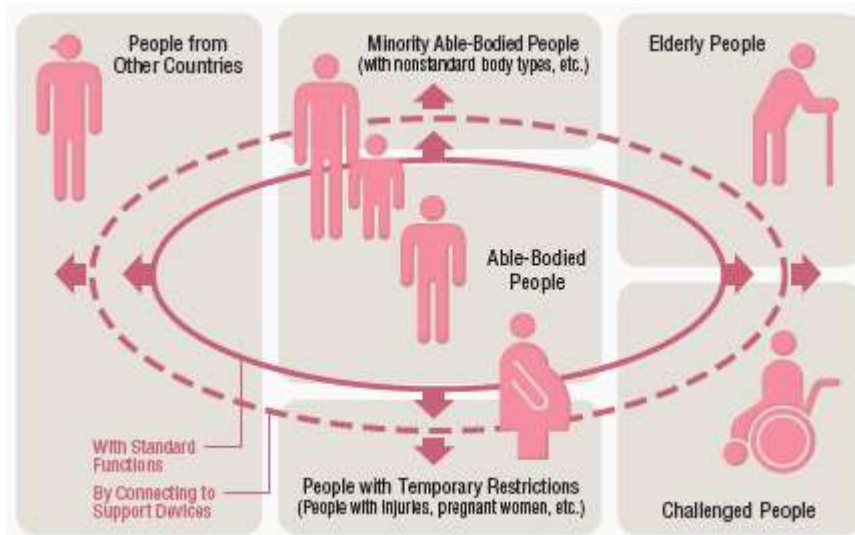


Figure 5: Concept of universal design is for all people

(Source: <http://www.oki.com/en/csr/csRACT/customer/ud.html>)

According to Saito (2006), there are two concepts of accessible designs and barrier-free design, which are often used as virtually synonymous terms. However, since these two concepts are usually focused on older people and people with physical disabilities, they are more parochial and considered inappropriate as similar concepts to universal design. UD's targeted users are not focused on specific people, but instead broadly on the inclusion of all types of people in the environment. Figure 6 shows that a successful design can be achieved once it can be used by all types of people from normal to disabled people, including the elderly and children, from hierarchy 1 until 8.

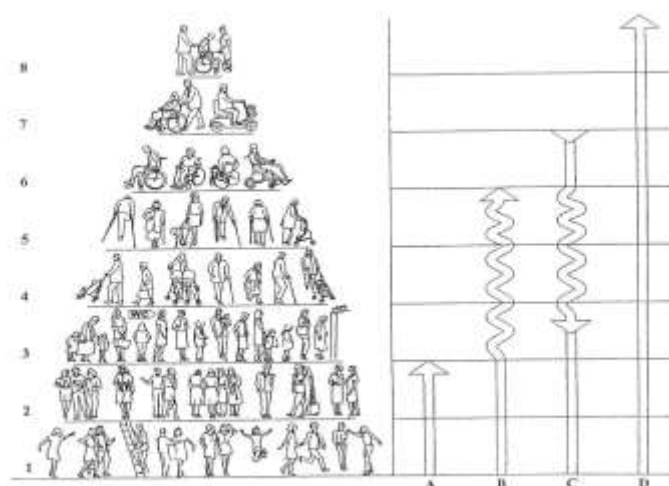


Figure 6: The Universal Design Pyramid demonstrate the bottom up methodology of universal design (Source: Universal Design Pyramid by Goldsmith as cited in Asiah, 2012)

The built environment includes all external campus areas, such as sidewalks, routes, parking lots, buildings and campus signages. During the implementation stage, it is very important to implement the principal of universal design in order to create an accessible campus environment especially for PwDs which, at the end, it can determine the level of accessibility through the universal design index.

CONCLUSION

In conclusion, it is important to understand the needs of SwDs before making any decision. Good campus physical environments can be understood better and improved through greater sensitivity to their nonverbal communications, by increasing designs and spaces that give a sense of comfort and security and by giving closer attention to the campus's wayfinding features. This can be achieved by increasing the focus on the place-making aspects of campus design. The paper also provides a platform to explore the need of PwDs/SwDs especially in the campus environment based on the type of disabilities that include physical impaired, visual impaired, hearing impaired, wheelchair user and learning disability.

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