

Universal Design and Accessibility: Towards Sustainable Built Environment in Malaysia

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Abstract. An overview about the present status of the facilities, awareness and research related to Universal Design in Malaysia since its independence in 1957. For the last 10 years, Malaysia has shown exponential growth in every aspect, and Malaysia government has given numerous supports towards attending the needs of disadvantaged groups including women, children, single parents, elderly and Persons with Disabilities (PwDs). Many standards, regulations, code of practice and guidelines have been developed to have good accessibility, connectivity, usability and seamlessness in built environment. Recently, various groups, including professionals in the building industry have implemented universal design and accessibility in their projects and development. The methodology applied includes table research, observation and access audit at several case studies of public buildings in Putrajaya. KAED Universal Design Unit (KUDU) of International Islamic University Malaysia was formed with the intention to promote the application of universal design in the built environment and product design, as well as to disseminate research findings through international conferences, symposiums, workshops and product competitions. Universal Design is offered as a subject in IIUM Architecture programme, to instil graduates in understanding of the concept of 'barrier free', 'design for all', 'inclusive design' and 'universal design' and their application.

Keywords. Sustainable Built Environment, Universal Design, Persons with Disabilities (PwDs), accessibility, KAED Universal Design Unit (KUDU).

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1. Accessibility towards Sustainability

A sustainable design for accessibility should be considered in all of our physical development in order to make our cities world class. Accessibility in the built environment is increasingly relevant to Malaysia, not only to prepare for the ageing population, persons with disabilities (PwDs) but also the whole population at large. According to World Health Organization [1], it is estimated that 15% of the world's population has a disability and this constitutes more than one billion people with special needs worldwide. This estimation also states that almost 80% of persons with disabilities (PwDs) population lived in developing countries. The statistic of persons with disabilities (PwDs) registered under Department of Social Welfare, Ministry of Women, Family and Community Development, Malaysia (DSM/JKM) in 2012 has the total of 436, 317 people to date and will increase as more persons with disabilities (PwDs) are to register.

The main objective of this paper is to identify how the concept and application of Universal Design and providing accessibility for persons with disabilities (PwDs); to what extend; can promote sustainability in the Malaysian Built Environment in terms of building design, applications and enforcements as well as providing deeper understanding regarding the existing Malaysian Standards and its future direction, and other related documents including ISO Standards for persons with disabilities (PwDs).

2. The Application of Universal Design

There are many researches done in line with the strategies and approaches in designing, constructing and managing accessible built environment to ensure that it satisfies the needs of the intended users such as persons with disabilities (PwDs), the elderly and to cater a more diverse range of ability or disability in the community. According to S. Keates and J. Clarkson, enabling inclusive design requires the successful capture of information about the end-user and representing that information in a form that is accessible to the designer since inclusive or universal design are fundamentally derived from a user-centred design theory. The designer then needs to have the necessary tools and techniques available to translate the end-user information into a concept, which can then be tested against the end-user's needs and wants [2]. In addition, Emory Baldwin mentioned that housing is too frequently designed for the 'average' person with 'average' physical ability when, in reality, few people meet this description of 'average'. People range greatly in size and physical and mental abilities, and they experience many changes throughout their lives. He argued that when designing a house, designers tend to respond to 'snapshot' of the client as he or she looks today, and they forget to allow for changes in the client's physical ability and lifestyle over time. Good design should accommodate all users, and when all users are taken into account equally from the beginning, rather than as an afterthought, the resulting design can be intelligent, sensitive, exciting and non-exclusive [3].

It has been gazetted and approved on December 13 in 2006, the UNCRPD (United Nations Convention of Rights of People with Disabilities), and this has started the global trend toward universal/inclusive design as it was formed to protect and enhance the rights and opportunities of the world's estimated 650 million disabled people. Many countries sign up to the convention, including Malaysia, and have agreed to adopt and enact laws so that persons with disabilities would have equal rights to education,

employment, and cultural life; the right to own and inherit property; not be discriminated against in marriage, children, etc; not be unwilling subjects in medical experiments [4].

International Standards Organization (ISO) 2011 have stated the prime objective in designing, constructing and managing the accessible built environment is to ensure that it satisfies the diverse needs of all of its intended users. Such an environment should reasonably satisfy the needs of any one individual without unreasonably compromising those of another. This is particularly important in areas of health and safety. In many instances, the use by specific individuals of assistive products assists them in using the built environment. Every effort should be made to address constraints such as limitations of space or topography on the development of new environments that suit everyone's needs. Different constraints are likely to be encountered when attempting to modify the layout and structure of an existing building or external environment. However, as many as possible of the individual provisions within this International Standard should be adopted, whether the environment is newly constructed or an existing one is to be modified (ISO 2011).

In addition, JD Harrison reported that cities and governments began to look at codes to make environments more accessible. Where voluntary codes had generally not been effective, despite good intentions by the designers, legislation was now introduced to require clients and building owners to incorporate access features into their new projects [5]. He further added that the Seven Principles of Universal Design by Ron Mace, state that facilities should be designed to be usable 'to the greatest possible extent', rather than 'by all', recognizing that there are limits to providing this inclusion to everyone in all situations [6]. For designers, an understanding of these limitations, especially in respect of legislation, is an important step towards better and more integrated design; furthermore, understanding something about the ways in which we design can actually help us extend our skills and design more creatively. JD Harrison [7] has continued to quote that Universal Design and Inclusive Design have now gained wide acceptance as similar concepts, even where there may be limited evidence of it being put into practice in the built environment. Although building codes require significant elements of construction to be made barrier-free, it is much more difficult to legislate to make a more comprehensive and 'joined-up' environment overall. And yet the very real problem for many people is often that some of the important parts of the accessible environment may not connect at the interfaces; this may be because separate elements are provided by different agencies and are governed by different codes. Public buildings for instance may be accessible and usable by people with a range of disabilities, whereas the road system is the responsibility of another authority, with its own standards, and much more. Thus the simple narrative of a person going to a clinic will be subjected to standards and constraints that vary quite widely.

3. Sustainability of the Built Environment through Accessibility

According to Van Der Ryn & Cowan (1995) the first generation of Sustainable design was introduced based on small scale experiments. They found out that energy efficiency, alternative building materials, conservation, and recycling have been widely adopted in the earlier stage. The second generation of sustainable design began to realize that the integration of all the factors can produce the best results for sustainable design. This includes the synthesis of all the various ideas and strategies of past into

complete and large-scale sustainable design theories and practices. Amer Hamzah Mohd Yunus [8] suggests that sustainability involves meeting the needs of society in ways that can continue indefinitely into the future without damaging or depleting natural resources. In short, meeting present needs without compromising the ability of future generations to meet their own needs. It can be argued that Universal Design is related to the Sustainability concept that deemed to fulfill all needs for present as well as future needs.

'By applying the principles of universal design and visitability, we can do much to improve our quality of life, minimize our environmental footprint, and make our homes and communities more resilient and sustainable'

Kathy Sykes, 2013

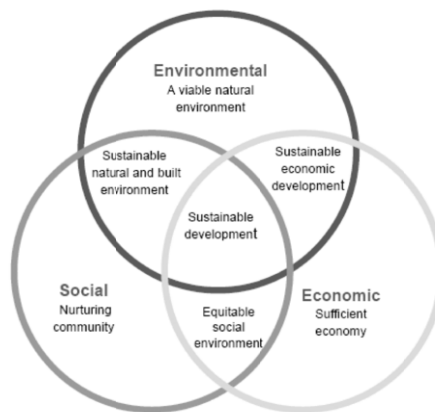


Diagram 1. Sustainable Solutions (Source: Mohd Yunus, A.H, 2013)

Based on the statement and diagram above, it is clearly stated that sustainable built environment can be achieved through various methods including lifestyle, quality of life with application of Universal Design.

4. Development of Universal Design in Malaysia

Barrier-free concept was introduced during the post-World War II period, when many soldiers returned from the war with various disabilities, such as amputation and hearing impairments, and rehabilitation centres that were built during that time need to be accessible. Due to low mortality rate in European countries, the number of elderly population has steadily increased, which calls for better, more accessible facilities to accommodate them. Many cities in Europe have improved their facilities to cater for the needs of persons with disabilities (PwDs) and elderly. These developments, however still takes a few decades to be fully integrated in providing the facilities for them.

In 1957, Malaysia has just regained its independence, and is still underdeveloped. The primary focus of the country at that time was on the development of education, agriculture, economy, infrastructure and basic facilities. Therefore, the buildings

erected in this period are mostly not accessible for persons with disabilities (PwDs). By the 1960s and 1970s, the government was still focusing on developing the country in various fields in urban and rural areas. In the late 1980s, the development of Malaysian Standards and code of practices were initiated, and 3 Standards was published in 1990s, which are MS 1183:1990 [10] – Specification for Fire Precautions in the Design and Construction of Buildings, MS1184:1991 [11] – Code of Practice on Access for Disabled Persons to Public Buildings and MS 1331:1993 [12] – Code of Practice for Access of Disabled Persons Outside Buildings. Accompanying this, there are various acts that were enacted by the government, such as Street, Drainage and Building Act 1974, Uniform Building By-Laws 1984. Thus, in the late 1980s, Malaysia has started to address the needs of People with Disabilities (PWD) in the built environment.

JD Harrison has reported that between 1993 and 2002, the UNESCAP Decade of the Disabled addressed the problems that many Asian people were facing. Lack of access to buildings was in effect depriving them of their rights to education, employment and social or religious places. He informed that pilot projects in Bangkok, New Delhi and Beijing were instigated, focusing on a 1km square in the city and working with local authorities, building owners and all parties with as stake in the area to present plans to improve access in any way possible (JD Harrison, 2011). Malaysia, as a member of the United Nation Economic and Social Commission of Asia pacific (UNESCAP), is liable to uphold the BIWAKO Millennium Framework for Action towards an Inclusive (BMF), Barrier-Free and Rights-Based Society for Persons with Disabilities in Asia and the Pacific, October 2002. In 1998, I was invited to chair the revision of MS1184:1991 – Code of Practice on Access for Disabled Persons to Public Buildings and MS 1331:1993 – Code of Practice for Access of Disabled Persons outside Buildings together with the working group committees; MS 1184 was published in 2002, while MS 1331 was published in 2003.

To continue in encouraging awareness, KAED Universal Design (KUDU), International Islamic University Malaysia (IIUM) is established stating from 2008, mainly to conduct and provide access audits trainings to local authorities on various building typologies in Malaysia such as transportation hubs, waterfront facilities, shopping complexes, markets, heritage buildings, housing and jetties to identify the level of accessibility in these public buildings and spaces. From this pilot research conducted in 2008, findings show that only 25% of those case studies were considered good in terms of accessibility. As a result of this research, access audits module was developed in collaboration with government agencies, local authorities and also non-government organizations (NGOs) as a basis to evaluate the level of accessibility in the built environment.

5. Access Audit as a Method of Data Collection

As mentioned by Holmes-Siedle [9], access audit gives a “snapshot” of an existing building at a given point in time. The snapshots are a useful starting point in assessing the current state of accessibility and usability of existing buildings. An access audit examines an existing building against predetermined criteria designed to measure the “usability” of the building for disabled people. Usability ranges from getting in and around to exiting the building. Depending on the measurement criteria, the assessment examines the percentage of the facilities that can be used independently by disabled people.

The methodology applied includes observation and access audit module. This is to determine the frequently used area or route encountered by Persons with Disabilities (PwDs) is by conducting access audits at several case studies of public buildings. The objectives of access audit is to enhance understanding and awareness of Universal Design application through talks and seminars of experts and life experiences from persons with disabilities (PwDs), and further conduct an access audit to existing buildings in identifying problems and barriers faced. The access audit reports produced would be crossed referred to with Malaysian Standards (MS), Buildings By-Laws and development requirements related to provision of accessibility.



Figure 1. The access audits conducted are at public buildings and public spaces where the Persons with Disabilities (PwDs) will use and visit those areas.

(Source: Access Audit Report Putrajaya, Malaysia, Nov 2013)

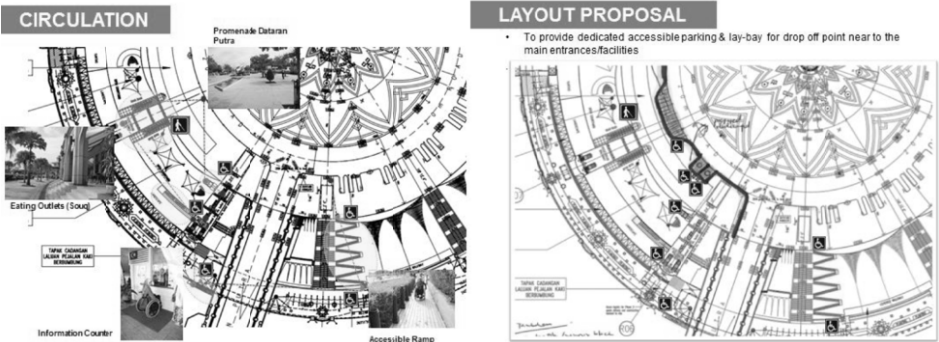


Figure 2 & 3. The access audit identify existing circulation route and has developed an accessibility map to ease legibility and way finding for the disable.

(Source: Access Audit Report Putrajaya, Malaysia, Nov 2013)



Figure 4 & 5. Pictures of existing facilities provided and barriers were identified and the report provide relevant solution in terms of proper specification and referral sources of designing options, if further upgrading of existing facilities is to be commence in the near future for a better built environment to be socially sustainable. (Source: Access Audit Report Putrajaya, Malaysia, Nov 2013)

6. Incorporating Universal Design as an Elective Subject into the Teaching of Architecture

As a lecturer from Department of Architecture of Kulliyyah of Architecture and Environmental Design, International Islamic University Malaysia (IIUM), I have prepared “Barrier Free Architecture” course outline as an elective subject for Bachelor of Architecture program. The objectives is to instill IIUM graduates of the understanding of the concept of ‘barrier free’, ‘design for all’, ‘inclusive design’ and ‘universal design’ and its application to be incorporated into graduates’ architectural profession and also to impart knowledge on the significant roles and responsibilities of professionals that is to ensure the physical environment is designed and accessed for all. Upon completion of the course, students should be able to identify the concept of barrier free architecture and Universal Design in their design, discuss and understand the difficulties and measure challenges faced by PwDs through access audit simulation activities as well as demonstrating good practice in various building and produce design solution with reference to Malaysian Standards (MS), Buildings By-Laws and development requirements related to provision of accessibility.

7. Conclusion

In conclusion it is important for sustainability to allow meeting present needs without compromising the ability of future generation to meet their own needs. Universal Design promotes accessibility to everybody ranging from the diversity of age and ability or disability. All professional in the building industry shall provide accessibility and apply Universal Design in all their new projects no matter the building are for public usage or for intended users. Universal Design should be taught in Universities offering architectural degree program to instill early awareness and access audit simulation is conducted in order to improve and upgrade the existing built environments. KAED Universal Design Unit offers a collaboration effort in conducting seminars, talks and access audit training module as well as developing access audit reports on audited buildings to help improve the built environment to professionals and

enforcements officers as to increase accessibility for the betterment of the future generation in providing a holistic social sustainability environment.

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