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Expanding

Universal Design Process: Thailand

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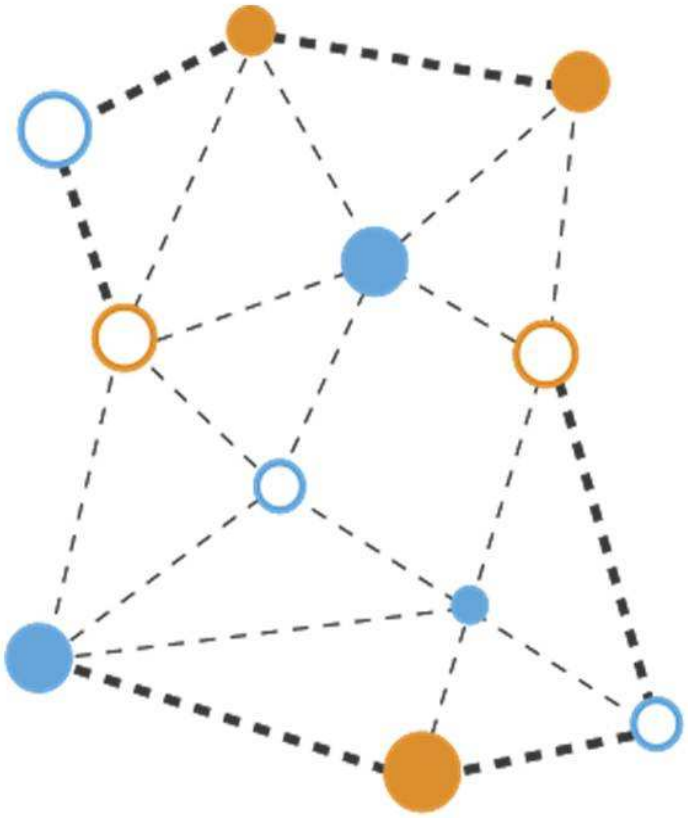

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Chairman’s Desk:

Dr. Sunil Bhatia

What does make us to design personal communication? Is it inbuilt in our mind or has come to the existence because of our hormonal functions or circumstances and conditions are responsible for evolving it? How does human mind arrange words effortlessly to express their thoughts while communicating is mystery and certain ideas generate out of blue for we have never given any thought is bigger mystery ? Nouns existed before the birth of man but how come humans thought of verb or other for designing grammar for communication. A school of thought believes that mutations of genes are responsible for communication in humans. It is happening with animals but they cannot communicate as human does. Is hunger, love, hatred, anger and other human emotions played significant role for designing the communication? If it is so the animal also experiences the hormonal changes and they should be able to communicate formally with one another that is definitely missing in their case and cannot communicate as man expresses himself. It means humans have evolved language out of something for communication where animals failed. Man has learnt the art of communication with animals and he designed the horse cart or ox driven transportation by designing the strap fix in animals nostril or mouth where pulling the rope generates pain in animals and to ease from pain animals moves in that direction. I have noticed in circus, trainer inflicts pain by whip on animal and

uses vocal power that allow doing what he is wishing. Can we live in world where no communication is possible? Is isolation with silence was our real purpose of existence or we modified to world of communication for living in community. Is communication evolved out of our survival instinct and search of safety for longer life? Was Adam victim of not able to share his thoughts and could not perform communication reason of birth of Eve? Every human has vocal chord for speech and ear for listening and man wishes beyond this and look for something that should be appreciated and for that he wants company who can listen. This practice still exists in modern communication where sender normally thrust his ideas on others and it is more visible in lunatic persons. What did force us for designing the communication? How come our cells are communicating and keep replacing the dead cells with new one and earlier information are intact for future communication. When we design the product we focus on interface and believe we have designed with proper communication technique. Interfacing is different from communication in product design. There is rain and how it is interfacing to avoid getting wet we have designed umbrella that is blocking interface. Design of opening umbrella or parasol and to carry with convinces is communication design. A small ribbon with canopy and tip cup near handle of umbrella for fixing the rib made of strong wire for proper management to avoid any accidents is real design.

When lightening with strong wind appears it communicates and inflicts fear and indicates tough time is close and yet to strike. Electrical Companies understand the communication and shut the supply to avoid any untoward incidences because of open high tension wires. Design of shoes was designed to block the interface with rough terrain and gives safety to users. Design of lace or number of eyelets or pump shoes is communication design and handles different conditions. Running shoe has longer lace to hold the shoe fit but for walking it is smaller and number of eyelets to hold the shoe is less. To cut the vegetables we need knife but to communicate with different vegetables for proper cutting we design different shape of knives is communication design. Water supply and management is essential for modern living and design of various tap according to need is communication design.

When someone design his house he communicates with experts and by using different sketches or design artifacts of prototype that can precede mock-ups that pave the way to a smoother product design process are nothing but better communication design. Skill of better communication is essential for controlling wastage and optimization of resources.

We are using the property of nature in design but fail to notice what it is communicating. Receding hairline in humans beings communicates physical strength is no longer strong what you have enjoyed in young days and advise that work accordingly for safety of life. Symptoms are communicating some kind of diseases are affecting your body. We know hot air is light and it moves upward. This concept has come to the existence from nature where the air is hot it goes upward and to maintain the equilibrium nearby less hot air rushed to fill the vacuum. Nature has its own communication methods say lightening, volcanoes, tornado , earthquakes, floods and other natural calamities surfaced when something goes beyond its bearing limit and we keep ignoring its communication .Other hand we keep focusing on her property for exploiting for meeting selfish motive. Human history has witnessed a few people who understood the communication but scientific knowledge of cause and effect theory has overshadowed their contribution and with passage of time their voice lost its impact. Weather lore is the informal folklore related to the predication of the weather. In India, wise farmers made certain observation of nature and understood what nature is communicating with us and they translated their ideas into couplets in common man languages. Similarly other parts of the world experienced the same people but history did not care for their contribution. Why do we think about sustainability and environmental friendly products because we are primarily focusing on cause and effect of nature but failing in understanding what nature is communicating.

Once my automobile was refused to move and I visited workshop where one of the workers started the engine and tried to hear its sound . Out of curiosity I inquired what he was trying to do . He replied “every machine communicates with us and has unique pattern with other parts of the engine and any part is unable to perform as per the set sound it creates noise that is the area needs our attention.” He further added if you are healthy and I play your favorite song

you will appreciate that gestures and if unwell it will annoy. I immediately recalled while igniting my LPG stove sometime knob is not properly turned and it gives dangerous sound that communication allows me to close the knob and tries ignition after opening properly. Similarly when my safety match box has moisture on tip of the stick or striking surface it does not give that sound what it communicates when it is dry. When I close my pen it produces special sound of click that communicates that it is closed. When mixer is not fit properly it produces sound that communicates fix it properly. When I am happy I make a sound that is different from pain. Is sound needed for communication or we can use other means? There are various means for designing communication other than sound. A museum curator arranges the different artifacts under some theme are nothing but communication design for users to move along with history. There is story and I am not sure about historical facts that in India when two groups were fighting in battleground and a priest or group of spiritual leaders passed wearing white or orange dress they stopped fighting and bowed down out of mark of respect. As they passed again they began fighting. White or orange color dress was communication that peace should prevail. In modern time, Red Cross society enjoys the same respect and their flag communicates to fighting group that no one will kill their members and will not hurdle in their noble works of caring for wounded soldiers. Ambulances or fire brigades produced special sound in emergency that communicates with person in road 'clear the passage'.

When I was child and to make my friend fear I used to make loud sound close to his ear and normally he jumped out of fear. Is fear in us the central idea that is primitive and allows in for communication? Is our survival instinct responsible in designing communication? I believe animals are best equipped with survival. Is safety responsible? I think partially it is responsible for designing communication. Sound is affecting our emotions or we have designed the communication that defines our emotions and this was the reason primitive people designed drums, flute or something that produced peculiar sounds. They understood different colors also played significant roles that affect our emotions. They extensively used sound and color in initial period of communication. As technologies improved their communication

improved. I remembered a game where one child ties a piece of cloth in his eye and tried to locate his other friends. This was the game where we experienced the difficulty of blind people and how they are grouping in dark by spreading their hands to locate the objects. That sensitivity is missing in modern video games. We are communicating but sensitivity toward others is zerored. It is reflecting in our SMS or emails where communicating the message is important but saluting or greeting has no place in communication. As long we were using analogue communication where succeeding was based on proceeding and expresses continuity of history we were sensitive. Introduction of digital has changed our thought process where succeeding is not related with proceeding. Hacking the digital is easy and difficult to locate where hacking clearly affects the drop in succeeding analogue propagation because it disturbs the continuity.

I have noticed when two ladies in my locality were talking intimately and sitting in care free style they keep touching one another body by hand as verifying her existence and it appears as it is subconscious act. Is it this primitive act that expresses as long you are alive and in this body I can feel your presence and as any one dies that act of touching, talking, seeing and hearing cannot be performed ? Radar is designed for communication by striking the sound waves to the flying objects for locating its position and speed. Similarly traffic police has a device for checking the over speed of the vehicles. Sitting carefree style indicates to other person that you are free to communicate as you wish and there is no fixed agenda of conversation and no set of rules. Their conversation keep changing the topics and moves from one thread to another and no one is aware what next topic surfaces. Sometime if someone is narrating something and there is distraction that breaks the conversation and talking person is so absent mind that she forgets what she was talking; both fail to recall what the last point of conversation was. Why does absent mind character exist in our mind? What does guide our mind to arrange the words in specific manner? Why does linguistic creativity exist in a few and they arrange those prevailing words in such a way it defines new meaning? I have noticed when two or more people are in conversation there is set pattern of fall of complete silence and it appears periodically. Why does it happen is mystery

for modern civilization. Is living in silence is natural and when we communicate is artificial world design by human civilization? Why does newly born child cry when it needs breastfeeding? Is it not natural that we are born to communicate? Why human basic nature of laughing and cry does is same? Is this act does not define us that content of human feelings are same everywhere but means are different. We have fingers in hands for interface with other objects but when to use and with what pressure the different fingers is coordinating to meet the objective is not communication design. Teeth and tongue is tools for eating but how to use when for eating is communication design and while enjoying ice-cream we lick with tongue , at the time of eating meat we use strong hold by teeth and drinking liquid we gulp. Eyes are designed for seeing other objects but use of eyes in different manner for different situations is communication design. Bright eye communicates happy moment but wet tells us sadness, twinkle in eyes expresses mischievousness and wide open in shock.

The moment we follow certain style of sitting or offer mat or chair, it restricts and set some rules of conversation. It is cultural dependent act. Teacher -pupil or priest - disciple or man -woman while talking follows some rules to maintain the decorum. Design of chair or sofa or chair design with head of lion that signify the expression of power has different set of rules for communication. Was not attempt by our primitive people for designing the standard communication rules that should help in eliminating doubts or misinterpretation of what other person is conveying? Best communication design is where scope of misinterpretation is impossible and conveys what for it was designed. In India, when someone strikes with powerful hand on his thigh to produce loud sound that shows he is challenging the opponents and ready to attack with set rules or some occasion he does to rejuvenate himself to perform tough task. Is it not personal communication? Why in one culture they welcome the person with folded hand and another culture they shake hand or verbally greets. When they finish their communication they use body parts that indicate signing off of conversation either by shaking hands or waving hands in air or using some fix notation of verbal communication. Why sitting on sofa or chair allow us to think in certain manner while talking to

others? What man used to be in primitive time and they communicate with heart that is missing with improvement with technologies? Every modern technologies is trying hard to design the communication that should be similar to what two people behave while talking and both keep watch on one another indications that are conveying something different what he is talking to respond in proper dignified manner. Response in conversation is culturally based and in some culture black dress signifies mourning and other culture it express happiness. A woman is married communicates to others by wearing a ring in specific finger or some community she wears red color powder on part of her head hairs. Similarly man communicates his association with particular sect, community or band by keeping beard or turban or hat or using specific symbol on his forehead. Why do we wish to communicate to others by using specific marks on physical body? Was this an attempt to standardize communication and process of eliminating doubts what for it is design for communicating?

I am exploring the mechanism through which humans have documented their cultures, and how and why they have chosen specific, visually communicative means to address and redress each other to express various desires, needs and concerns. Personal communication is nature's gift and women experiences when menstruation starts that I am fertile and can conceive. Other side when man experiences fall of semen that reminds him you have turned to man and can mate. But personal communication is almost as old as the man. By giving slight variation in natural act of blinking the eye design a new personal communication. Before the discovery of fire man designed many tools either for defense or killing the wild animals those can either harm or use as food was the concept of personal communication. Arrow was conceived by turning branch of tree for making sharp for killing the animals from safe distance was wonderful idea. I admire when primitive person realized missing the arrow for killing could invite more danger they designed many arrows and to hold they designed cylindrical box as holder that could be hung around human back diagonally by using thread for holding. Beauty is length of the holder is little shorter compared to length of arrow and this design helps in controlling the fall of arrows while running, jumping and it is easily to take out

the arrow just moving the hand backward and quickly can strike the target. Is it not communication design? When branch of tree was disturbed it was one kind of communication to others that something is there. That communication loses relevance when there is strong wind that disturbs the entire tree and no one can notice a disturbance in one portion. They might have experimented with vocal cord because sound travels faster when they speak in same direction of wind and travels less and difficult to hear when against the wind and at distance where sound dies before reaching to person. Vocal sound does not need other support and gradually it replaced all other means. By giving variation to pitch and changing intensity of sound they found it is internal and it is affected only in extreme weather conditions when voice lost it impact. Primitive person used the intensity of sound to correlate with distance and individual person's sound dies and does not go far distance compared to crowd voice. It is primitive practice that in modern time we can sing in chorus. How beautifully group of people still can sing that appears as one voice in chorus. That led them to split the sound voice by thinking it is combination of many voices and Fourier was the first person who designed mathematical model of primitive practice and revolutionized the life style of modern people. Best communication is personal communication and every new technology is heading in this direction to make it best as we talk in person. Touching of check of other was sign of caressing and slapping the same was sign of anger and something wrong is happening and it is punishment. Primitive person designed the communication first under the influence of hormonal changes and nature was supporting tools for further designing communication. Later on technologies played significant role in our personal communication design. Mobile phone almost killed the public booth and Whats App has killed almost MMs and SMS. As man discovered fire they designed smoke for personal communication. As man advanced and creating different shape of smoke by using different torches further added more information. Design of glass has revolutionized the communication. Glass can be moulded in different shape and design of prism that has capability to split the light into many color has added new dimension in communication. Design of mirror helps us to use the sunlight to communicate with other person. Biggest revolution came with

invention of electromagnetic wave. Modern communication is solely based on this.

Dr. Antika Sawadsri is a full-time lecturer in the School of Interior-Architecture at King Mongkut's Institute of Technology Ladkrabang (KMITL)and in June 2011 she was Guest Editor for special issue and that issue was appreciated by our readers. This special issue theme is Expanding Universal Design Process –Thailand. She has done her job of Guest Editor with complete dedication and sincerity. Best part is that it is truly reflecting in this special issue. She has invited authors who are established but given equal opportunity by inviting the promising young designers to join this social cause.

***Wi*th regards**

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Forthcoming Issues

July 2015 Vol-10 No-7

Humaniteam is a design laboratory which focuses on Health and Disability-related issues. We believe that the practice of a sport is conducive to enhancing the skills of people in disability situation in their everyday life environment.

Design acts as a bridge between each pole of expertise, thereby creating a common language and translating it into objects or services. HUMANITEAM is really passionate by design for All. Many projects of UD are ongoing. MsClaire Fauchille will be the Guest Editor.

August 2015 Vol-10 No-8

Dr. Bijaya K. Shrestha received Doctoral in Urban Engineering from the University of Tokyo, Japan (1995-'98), Master in Urban Design from the University of Hong Kong, Hong Kong (1993-'95) and Bachelor in Architecture from the University of Roorkee (now Indian Institute of Technology), India (1983-'88). Dr. Shrestha has got working experiences of more than two decades. He had already served to the Department of Housing and Urban Development, Ministry of Housing and Physical Planning, Government of Nepal, United Nations Centre for Regional Development (UNCRD), Japan and various architectural schools in Nepal before taking the present job at Town Development Fund (TDF). He has initiated a new master program in Urban Design and Conservation at Khwopa Engineering College, Purbanchal University, where he served two years as Head of Post-graduate Department of Urban Design and Conservation.

Dr. Shrestha is the recipient of numerous gold medals for his excellent academic performance and decorated by 'Calcutta Convention National Award 2006' by Indian Society for Technical Education for his best paper at the 35th ISTE Annual convention and National Seminar on Disaster – Prediction, Prevention and Management. He is

also member of numerous professional bodies and life member of various alumni associations. He has already contributed more than five dozen of papers, published in various forms: book chapter, international journals, conference proceedings, local magazines and journals including in local newspapers. Moreover, he has been invited in numerous international conferences for presentation of his research findings. Finally, his field of expertise includes sustainable urban development, disaster management, and housing, local government capacity building and development control. He will focus on universal design concept on Nepal.

September 2015Vol-10 No-9

Samanta Bullock is residing in United Kingdom and she is Wheelchair Model, Tennis Player and Public Speaker, Self Employed will be guest editor

October 2015 Vol-10 No-10

Prof Ravi and Dr Ajanta Sen of IIT Mumbai India will be the Guest Editor and theme of the special issue is Design and Children.

November 2015 Vol-10 No-11

EwaGolebiowska, Poland is the president of EIDD Design For All and she has accepted our invitation of Guest Editor and she will invite the authors from European countries for special issue.

Guest Editor: Antika Sawadsri (PhD)

Lecturer and Director of Master of Architecture (Interior) Programme

Vice President (Human Resource Development and Training)

Director of Inclusive Designed Environment and Research-IDEaR unit at King Mongkut's Institute of Technology Ladkrabang- K M I T L

Dr. Antika Sawadsri is a full-time lecturer in the School of Interior-Architecture at King Mongkut's Institute of Technology Ladkrabang (KMITL). She received a PhD from the School of Architecture, Planning and Landscape, Newcastle University, UK. She has qualifications on interior Architecture and Planning and is a specialist in an interrelationship between social construction of 'disability' and the designed environment. Her academic interest focuses on inclusiveness in the process of creating living spaces. Recently, Antika has taken parts in both the State's agencies and non-government's movement in mobilizing equal access to the buildings and city of disabled and ageing groups in Thailand.

It is such a great honor for me to be a guest editor for this newsletter the second time. This volume will take you to see how the concept of Universal Design or design that includes everyone in mind has been applied in Thailand, a country where human rights issue is on its way. This volume focuses on three main perspectives reveal in academic projects through:

1) ***A research project by a PhD candidate: Miss Charanya Phaholthep on "Empirical Study for physical design features for built environments within the Hospital Public Zone Regarding Accessibility of Disabilities Limitation: A Case of Naresuan University Hospital". This project reveals the state-owned hospital organization structure that impact on the level of applying universal design concept.***

2) Mini-research projects by the four students from a master degree program in Interior Architecture. Those four papers point on how people with different abilities have been viewed in Thailand context and what affect their spatial needs in daily living. They discuss struggles of people with mobility impairment, with small body or "little person', with visual impairment, and ageing ranges from product design, to public and private places.

3) A classroom experiment by groups of undergraduate students. This theme focuses on learning process aiming to raising young designers' awareness toward users with different abilities and developing design process with 'disability' in mind.

The following writings hope to encourage the readers advance some ideas on how a design concept, which adopted from different socio-cultural context can be understood and applied in the different one.

1 | Empirical Study for physical design features for built environments within the Hospital Public Zone Regarding Accessibility of Disabilities Limitation: A Case of Naresuan University Hospital

Charanya Phaholthep, Lecturer

Faculty of Architecture, Naresuan University, Phitsanulok, Thailand

Introduction

Design approach for 21st Century has introduced the new paradigm giving an alternative tendency to the knowledge and practice relating to design, in short, the good work of design is no longer merely serving a singular user or a group of user (e.g. people with disability). And this is consistently coordinate with the democratic concept of equality by supplying equity and applies to everything with embodying autonomy, self-organization, ecology, sustainability, adaptation, and continuous improvement. And this fundamental concept has not applied only for social service facilities but all types of operations related to design including product, interior, architecture, urban, traffic even communication and information technologies. (Preiser and Ostroff, 2001) Coordinately, with the most famous description of Karen Kroll, 2005 as said "the impact of buildings on people came not from an architect or a researcher studying workplace performance, but from a politician" and British Prime Minister Winston Churchill: "First we shape our buildings; thereafter, they shape us." Subsequently, to bring about the Seven Principles of Universal Design principles which established by the Center for Universal Design (1997) and developed into the idea of the performance criteria

contributing benefit inclusively for most people or for all. If there is any one facility type that this new paradigm should be applied to, it is healthcare facilities.

Universal Design is the design concept intending to provide benefits equally for everyone and inclusively for all physical limitations, gender and age and so on. It is a design concept focus on usability for all or as much covering as possible. The concept of UD is considerably influenced by a modern family structure, respectively with a transformation of a social structure and behavior in modern society. Originally, the idea of UD did not generate from a mere feeling of pitiful or sympathy, however a main factor generated this idea at the beginning was possibly influenced by the policy regarding taxation deduction for non-dependent person. Although this is a matter of law, perhaps it brought a powerful influence on the design trend, particularly, the housing involvement. For example, designer contributed creating a house in order to support people with disability to live by themselves without caregiver dependency. In brief, the UD concept associated to the changes in life style which is influenced by a family structure in a modern day, and coherently, the UD concept changed a living trend in the modern society. Thus, the UD concept is fundamentally based on the basis of performance evaluation regarding usability which is different from a standard accessibility, but means to append all accessible factors in all aspects of design, in order to create a better inclusive design with prevention of problems or allowance for later modifications.

Healthcare service universally takes a role as a primary of the human right in community. (Alma Ata Declaration, 1978) In today's society, the role of healthcare organization is not merely responsible for quality of hospital treatment, but also serve society in a matter of people's health rights and security, in order to supply Right to Health (the economic, social and cultural right), such as a self-determination, access to information, privacy, solidarity, relations among doctors-patients, relations among relevant person-doctor-patient (WHO, 2008), as well as the basic rights of citizens. Accordingly, the basic rights of citizens must be responding to fundamental matters of social

needs, such as easy-to-access, and to give priority to all people inclusively (Nicoletta Setola, Sabrina Borgianni). Right to health is part of the social rights which satisfaction of social rights is not only a benefit of the state facilities alone, but covering all facilities regarding the quality of life within the society such as built environment or buildings and etc. Hence, right to health belong to social rights. The full satisfaction of social rights does not depend solely are exercised, and the distribution of single state benefits, but on social life as it happens in places such as the built environment and in buildings. Therefore social right require existence of social links – as family, school, working environment, social and personal life environment – in which and through which everybody become a person and is able to express him/herself as such (Longo, 2012).

The rational process of architectural design, in any types of buildings, primarily required to focus on the specific design questions and objectives before the process of design begins, for instant, what is this thing or building design for/to meet with? Or what is the main goal of thing or building utility? Which the utilization often achieved after designer known what the building's purpose or who are the users of the thing or building? Therefore, to determination of functions or usability of space should be definitely, based on the user's activity and behavior (Noppadol Sahachaiseri, Healthcare Building Design).

Hospital is a type building that consisted of a variety of utilities, respectably, that facilities and built environments within the hospital are frequently complicated, of course, and those facilities are created in fulfillment of public requirement (Philip Murphy, 2012). Accordingly, the planning of healthcare facilities, whether for a small or large complex always required more elaborations and sensibilities, because of the facilities within the hospital is continuously changed conferring to the development of the health science technologies. Thus, these are challenged factors for the knowledge and practice of design which these factors frequently affected the form of building as well as interior features. Of this reason, before conclusion designer has to carefully consider all important purposes in order to response the user

requirements with increasing quality, for both, medical treatments and service facilities as well. Moreover, the healthcare market force became tensely competitive and the trend is rapidly upward, since the first decade of the 21st century. And it becomes too critical factor to disregard which it has already shown significantly influenced on the improvement concept of hospital nowadays. As said the user have the right to make a decision where is the most easily accessible and provide the best comfortable environment (Wolfgang Preiser F.E.).

Although it is an early stage of the association between the architecture and medical treatment rendering the positive effect of physical environment design influenced on community's well-being, promote healing, relieve patient pain and stress and reduce medical errors, infections and falls (Verderber and Fine, 2000). Recently on various studies, they have very clear results from empirical studies and evident-based design relatively; show the new role of design and architecture involved with the therapy treatment and well-being. (Alice, 2008) Regrettably, architectural and environment design is regularly disregard the role of therapy treatment, and without intention to create architecture or physical environment in order to help the medical treatment activities, in consequence, the failure of planning, programming or operation of healthcare design project, often given a negative effect on the condition of patients' illness. This situation is still widely happening and waiting for improvement, unfortunately the said matter is still being overlooked. In addition, the danger caused by poor design within hospital building has not been concern or not visible/responsible for decades. Meanwhile the key factor is quiet clear that the architecture and physical environment can be partly contributing well-being within medical care building, however, the members responding for these matters are not in the administration position to give a policy. Thus, the knowledge regarding healthcare environment design is still being undeveloped, the built physical feature and environment within the hospital including artistic images, characteristic, sizing, lighting, air quality, circulation, way-finding system and etc. All the mentioned factors obviously affected the quality of medical treatment on average; unfortunately they are not taken into account. In contrast, only the quality of treatment alone are being measured

and improved with standard criteria for assessment and evaluation. Although, it is clear that the condition of "Right to Health" which is partly involving to physical and environment design and has a positive effect on medical treatment but the role of design is still not enough concern. As the said results, the role of design should be carefully considered and evaluated using empirical study process, the evaluation criteria should be recorded and developed for more effective criteria. Therefore, these efforts will hopefully bring advantage in improvement the present condition of the hospital in a short term benefit and for a better planning for a future design project.

As mentioned above, researcher focused on the participation of occupants or users, in associated with the equality of usability for all users. Therefore, researcher bring some part of the project named "The Renovation Guideline for the Physical Improvement in Respondent to disabled persons usability in the Public Zone under Universal Design Approach: A Case of Naresuan University Hospital" to present on this article which consists of process of empirical study in physical feature and environment design, mainly focus on the level of accessibility of people with disability towards the service functions and facilities within the public zone of the hospital. The project is structured as follows:

The research objectives

1. to study the physical environments and function accessibilities to the hospital public areas of people with disability.

2. to analyze the obstacles regarding inaccessible functions in the hospital public areas caused by the physical limitations of people with disability.

3. to inform the design guidelines and suggestions for the design process for the physical feature and environments in the hospital public areas concerning with people with disability.

The methods

This article focuses on the research study regarding the behavioral and the functional accessibility issues of people with disability in the public zones of

Naresuan University Hospital. This study is concerning on activities, behavioral and physical problems that occurred in the public zones which related to location, size, facilities and the appropriate linkages between the area of each activity and the usage of people with disability. Therefore, the processing of this research project operates by the way of scenario access audit and experimental-base studies with participation of a group of people with different types of disabilities, to participating and experiencing the level of accessibility of all service functions in real actual sites and spaces of Naresuan university hospital public areas. The operation processes are described as follows.

Step 1: The sector of correction and review the literature documents information which divided into two parts: the first part is about the concept of Universal Design theory as well as the agreement of standard criteria defines for the basic facilities for disabled persons in accordance with the rules of the ministry of Law 2005)Thailand Ministerial Legislation, 2005(. The second part is the study and review regarding the built environment design theories, including the way-showing and way-finding system, environment design for directional guidance, the design process for health care facility to meet behavioral and satisfactory of patients and occupiers and, the techniques and processes of built environment evaluation to convey appropriate physical facilities with an emphasizing on the issues related to people with disability.

Step :2The preliminary study about the flow of accesses to service functions and physical features of the public area which consists of the parking lots, the main entrance to the building, triage counter, public relations counter (PR), out-patient department (OPD), emergency room (ER), exam diagnostic room, cashier counter, pharmacy, elevator and elevator hall, public corridor and hall, bathroom etc. This survey determines the details and limitation of the location and size of these particular spaces which classified by type of zone, respectively with the flow of activities of service functions within the hospital.

Step 3: Apply the information from the survey to determine the experimental points and areas classified by categories of clients' physical disabilities including the limitation of mobility, hearing impaired, descriptive or

communication errors and visual disabilities. This experimental study is consisting with deaf, blind, low vision, wheelchairs, walking stick and cripples persons.

Step 4: By the summarized results from step 3, researchers create tools and methods for operating the scenario access audit and evaluation process of physical environment, both inside and outside the hospital. The operation begin by inviting a group of people with disability to participate and complete the simulation tasks in actual sites which the setting situation will be close to the regular patient flow of this hospital. This process is used for determine the real factors of particular space and facilities which is not meet the physical limitation of disabilities. All of corrected results will be recoded, identified, analyzed and then classified the finding problem into a group and isolate the problem by the level of frequencies, mathematically with the basic statistics formula (T-Test) resulted in percentage system.

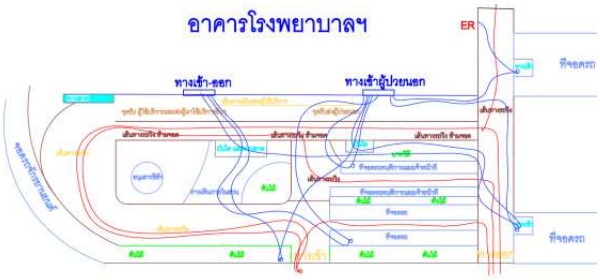
Step 5: From the scenario access audit reports from Step 4. Researcher analyzed and summarized the obstacles caused by the physical limitations of disabilities to access to the public facilities of hospital. In additional, the summary of obstacles will be reviewed in cooperation with interior design theories. Finally to inform the design guidelines and the process of environmental design for hospital public zone, of course, appropriated with the utilization of people with disability.

The research results

Researchers summarized and divided the research results into 2 issues: (1) The issue from a preliminary survey of the physical features in the hospital public areas in preparing and responding to the service functions, and (2) the issue from the access audit and evaluation process which operate by the participation of people with different types of disabilities in the simulation tasks in actual sites with the regular service flow of this hospital. Details are as follows:

.1Summary of results from a preliminary survey of the hospital public areas in preparing and responding to the service functions, following the formal

process of Post Occupancy Evaluation (POE). This tool and method focus on assessment and evaluation of physical functions that are appropriate for people with disability. The results based on the indicative problems and obstacles of a physical environment that affected the space, activities and service facilities of disabilities. These investigating areas are including the roaming paths, the connection and association between the locations and activities and facilities for disabilities, all are descript as follows:



Picture of the exploration map of the vehicle way and walking way according to the actual situation of Naresuan University Hospital.

Image of location map and activities of each service facilities according to the actual situation of the 1 floor, Naresuan University Hospital.

walking way **vehicle way**

1. The exploration map illustrates the pathway approaching to the entrance of the hospital building in concerning of walking and vehicle routes.

2. The exploration of location map and activities of each service facilities are consisting as follows: Triage counter, Public relationship counter, National health security office, Out-patient Departments (various specialists), Exam Diagnostic rooms (X-Ray, Lab), ER, Cashier, Pharmacy.

Images of facilities in the hospitals such as counter, ramp and parking lots for disable

people, also conducive to all users, in Naresuan University Hospital

3. Exploration of various facilities, specifically for people with disability consist of signage, ramp, elevator and furniture such as waiting chairs, counters and etc.

The survey found that a density of crowd occurred in various critical areas, both inside and outside the hospital such as the car parking areas, vehicle drop off for patients and other users, the OPD main entrance point, triage counter, public relation counter, the entrance of medical department, entrance hall and corridor within blood test laboratory, orthopedic department and other departments, the walkways in front of cashier and pharmacy. The densities of people caused a great obstruction to the flow-route at various critical points affected both patient trolley, wheelchair and other persons with disabilities, in accessing or finding the way to other to service facilities. As the hospital all over the world has been changing continuously according to the significant growth and progress in the health science technology, caused the similar tendency to all specialist departments within hospital, relatively required for extending, reorganizing or changing location for other appropriate spaces. This tendency was consequently creation a number of barriers, way finding and showing system as such. There is no exemption for this hospital, the main problem is obviously the matter of difficulty in finding a destination, in addition, the density of people that obstructs in various pathways and service facilities throughout the hospital are also other activated factors.

2. Summarize the results from the scenario access audit process which operated by the participation of people with different types of disabilities in the simulation tasks in the actual sites within this hospital. Method of this research base on empirical study which operating this indicative process by participation of a number of people with disability experienced in the real situation of service facilities within this hospital. This study intended to identify, investigate and diagnostic the sources of obstructed problem concern on activities, behavioral and physical limitation of each type of disabilities that occurred in the public area of this hospital, relatively with the physical feature, location, space, furnishing style, built environment, signage

system and a level of appropriative connection between each function within this hospital. The participation of people with different type of disabilities are consisting with 5 males and 6 females, one of them is an elderly person. The specific detail of 11 participators in total are including 1 of deaf person, 4 of persons with visual limitation- 2 completely blind and 2 visual impairment, 4 wheelchairs, 1 cripple and 1 congenital armless.

The audition in simulated situation to access to various service functions within the hospital of 11 participators with different types of disabilities, each participator will receive a different task and required to perform a given activity by following the regular service flow with pretending as if they are a real outpatient coming to this hospital in finding a medical treatment. For reduce the duration of all given tasks, participants will be separate according to the type of their disabilities then, perform their given tasks alone to identify the appropriate and inappropriate space, environment and overall service facilities etc. within this hospital, in additional, to indicate the obstructions that affected with their personal disability. For instance, this process is operated to find the advantages and disadvantages aspect of the current physical environment and other service functions that inclusive and supportive for people with disabilities. These operations will be performed in the following areas respectively by each participator will begin their task at the car parking area, the main entrance, triage counter, registration and public relation counter, department of medical, emergency department, exam diagnosis room, X-Ray and laboratory, cashier counter, pharmacy which all the intersections, connective corridors, halls inside the building and other facilities such as elevators and bathrooms are also recorded. Besides, during each participant performs their scenario access audit, will be observed and recorded on video camera which the observers will always keep a distant from participant and do not giving hand to help them if not necessary in order to keep the scenario as close to the reality as possible. The results can be summarized as follows:

1). Car parking area and the building entrance: Problems found

- *The signage shows the points for parking is not clear.*

- There is no sign or signal leading to the parking lot for people with disability in parking area.

- There is no footpath or an obvious passage caused vehicle and walking people dangerously, share the same route in some part of car parking area.

2) Hospital main entrance: Problems found

- Temporary drop-off at the building entrance hall has no signage (or not clear enough) presenting the OPD main entrance.

- The distance between drop-off point and traffic route is very close together causes a serious harms if someone dropping from a car by the right side.

- Pathway and OPD main entrance has no cues (such as tactile paving) to navigate the visually handicapped and there are other objects such as chairs obstructed on the passageways or other obstructions across the area to the wall and etc. By these causes bring the failure to the visually handicapped in estimation and recognition the surrounding environment.

- Intersection and the entrance door should have a warning sign, both visually and auditory and warning sound installing at other important points for the blind and visually impaired person.

- Walking passage into the building are often blocked by wheelchairs or patient trolleys, caused a difficulty in accessing to the entrance.

-The OPD signage is installed at the position that is not perceptible to the eye.

3) Triage Counter for new patients: Problems found

- The location of the triage counter is located next to the entrance door, of course, a short distant can be an easy access for persons with disability, but the disadvantage aspect is the congestion during the peak periods of morning time which a great density of crowd are awaiting at this area. Consequently, causes a difficulty for both, people with disability and other people to find a way or pass through this area to other departments within the building.

- The sign or nameplate of triage counter is located only inside the building, difficulty or unable to view from outside, especially persons with disability such as a wheelchair or visually implied person furthermore when the crowd density occurs, this area will be almost inaccessible.

- Although counter height level is appropriate for both general people and with disabilities, but the design of counter does not has specific concern for the space underneath the countertop, particularly for the wheelchair usage, thus the difficulty occur when a wheelchair user wishes to use the counter for writing or other similar functions.

4). Public Relation point: Problems found

- The observation and audition found a density of crowd at this area, especially during the morning. This causes congestion by crowd of people standing in the queue at the PR counter, where the line goes across the hall to the area of the main passage to various important departments in this hospital. Thus, this congestion creates a barrier on the passage for wheelchair, patient trolley, people with disability and general walking people as well. The problem from the audition has recorded that while wheelchair people is being wait on the queue for access to this function, since a congestion occurred this area, a lot of people and carts walking cut across the queue line caused a chaotic situation, often jumping the queue happen to people with disability as well as general people. This situation is even worse to visually impairment or blind which cannot realize the surroundings at all, mainly because these obstructions on the walkway.

- Public Relation point has no audio signal to indicate the position of this service facility.

- Counter height format is too high causes difficulty for the wheelchair to communicate with staff.

-The location of waiting area (including waiting beaches and chairs) is likely going across the main passage into the other departments. Consequently, the

visually impairment as well as wheelchair will be facing a great difficulty to pass through or access other services.

.5Therapeutic Departments

This research project selected only the departments that experiencing the most density of crowd as well as highest level of problems in service facilities, including Medical department and orthopedic department.

• Medical department: Problems found

- As the department entrance is located very close to PR and triage counter, so the crowd of people that waiting on the queue for registration, especially at the peak period, always overflow and block in front of the entrance. Thus, wheelchair and blind often face a difficulty to see or enter this department.

- Registration and primary physical examination (Wellness check) counters inside the department is located close to the entrance and likely stands across the inner walkway. During the peak period the crowd congestion is frequently obstructed the passage within this department.

- The area people waiting for their appointment card, the circulation of pedestrian has come between the waiting seats and appointment counter, thus it is difficult for wheelchair and blind to access this function easily.

- The signs or nameplates guiding for the service facilities points within this department are apparently not clear, several of them using too small font or located at the level considerably too low to view by sitting position or wheelchair, often find blocked by a density of crowd or carts .

- There are no signs or symbols or audio signal or the tactical tiles to guide the way to each service facility.

- The major obstacle for the hearing impairment or deaf person is the calling system which the visual signboard is not present in this department. Even for general people, the calling sound is disturbed by the noises during the peak period.

- Although the wider corridor of this department is an advantage condition for wheelchair, but the spacious space of corridor without tactile paving (Braille block) is difficult to estimate the direction and surroundings for the visually impairment or blind person.

• Department of Orthopedic: Problems found

- To enter this department, there is no tactile paving (Braille block) and audio signal to help the visually impairment or blind person for navigation and estimate the direction or surrounding environment.

- Density of patients often congested in front of the department entrance, waiting for their treatment. Thus, the visually impairment or blind person finds difficulty to get to the registration counter because the entrance is blocked.

- There is no audio signal or other specific equipment to help blind person for navigation to the registration counter.

- Congestion has often occurred at the entrance hall, caused difficulty for people with disability to pass through this entrance, especially wheelchair and visually impaired person.

- The way of positing and locating the furniture within this department is perhaps, inappropriate. For example, the wellness checks counter is located very close at the front side of registration counter, apparently a lot of patients and nurses are workout their activity in front of the registration counter, thus the chaotic situation occurred because other patients also have to make their registration at the overlapping space. An additional example is about the location of registration counter and waiting benches which is located too close to each other. This affected the walkway to treatment room to be too narrow, as orthopedic patients often come to this department with wheelchair or various types of walking supporters, therefore the narrow walkway, overlapped space and density of crowd caused difficulty to access the facilities within this department.

- The height and design of registration and appointment counter is obviously too high and unsuitable design for a person in wheelchair to communicate with the staff or use the countertop in writing purposes.

6. OPD Cashier: Problems found

- Most of participators are able to access to OPD cashier easily because it is located at the main corridor of this hospital make it clearly seen.

- Wheelchair person is required more effort to find the cashier, because of the section nameplate is not installed at the appropriate location that meet with the sight (view from wheelchair).

- There are no cues to navigate the blind to OPD cashier, thus Blind persons cannot find this section themselves (In the audition, staff have to lead them to OPD cashier).

- The height of payment window is too higher for wheelchair persons caused inconvenient for communication between participator and cashier staff.

- During the peak period, the large numbers of people stand on the queue for this service then the row line goes across the main corridor where other patients also have to pass through the same corridor. By this situation sometimes caused the people with disability being overtaken the queue.

-There are no symbols or audio signal for the hearing impairment of deaf person.

7. OPD Pharmacy, 2 activities are performed at this stage including (1)to submit the payment slip and then (2)to receive the medicine: Problems found.

- Most of the participators are unable to find OPD pharmacy because there is no clear sign or nameplate to present the location of this facility.

- This facility is located along the passageway to other departments where a lot of people pass through for various purposes. During the peak period when the row line of the queue goes across the passageway, the row line is always being crossed by other people who pass through (often come from medical

department), this situation frequently make the blind and wheelchair being overtaken their queues furthermore they find difficulty to reach the pharmacy counter.

- The feature of pharmacy windows, both submit the payment slip and receive the medicine windows are too high for wheelchair persons, it is inconvenient for communication with the pharmacist and receive their medicine.

- Since the main passageway goes across between the waiting benches and the pharmacy counter, the wheelchair, blind or even regular person are frequently obstructed by the crowd of people who walk through this area.

- Should have a waiting seat for people with disability near the calling area in order to help them to access signal clearly, especially for the deaf or elderly people who are unable to hear or see from a distant.

8. Intersections, walkways, corridors and halls within the 1st floor of this hospital: Problems found.

- All of participators experienced the similar problems to follow the patient flow, since most of service facilities department within this hospital are located along the main passageway, thus the density of crowds that congested around each department easily overflow to block the walkway. In addition, the source of this problem sometime caused by the positing and locating of furniture, perhaps, the location of department. The said situation really affects the people with disability most, with limitation of physical abilities, they finding difficulty to roaming from one point to others within this hospital.

- Chairs or benches at the waiting area of each department are often located across the walkway.

- There is no tactile paving (Braille block) or other navigated equipment to help the blind in finding direction.

- In some area furniture are installed against the passageway, for example the waiting area of PR counter where the corridor are blocked by some chairs

(During the audition, the blind got confuse with the direction because of this obstruction).

- Signage guiding the directions to each service entrance on corridors should concern for the installing location and the position should goes against the vision from the walkway.

- Signage should come at appropriate point for easy access, probably before the department, not too soon or not too later.

- Signage locating exactly at the intersection of walkway is possible to be another source of obstruction on the walkway. Because of some people stop and spend times at the middle of the walkway reading the signage.

- Position of some the signage is too high for a wheelchair to see easily.

- The wider walkway is an advantage for roaming a wheelchair, however, the blind finding difficulty to keep direction or estimate the surroundings in the wider space.

9. Elevators: Problems found

- Audible signal in elevator is available only in English, thus most of participators cannot access this function fully because they do not understand this language. Furthermore, this is only possible function that available for guiding blind user, unfortunately the communication has not success.

- In terms of size, the elevator has enough space for wheelchairs to rotate within the cell. Although the height of control buttons including open-close and selecting the floor buttons are located within the reach of wheelchair person, however the emergency button which located, vertically on the top of stack is considered too high to reach from wheelchair.

- Braille letter are available on the control buttons so the blind can use this function conveniently.

- There are no specific signals, especially outside the cell, to help the blind in finding the point of elevator calling button, the elevator doors and being informed which elevator is coming. Recorded from the audition; the blinds

cannot get into the elevator before the door automatically close, therefore the staff has to help them to get into the cell.

10. Lavatories: Problems found

- Accessible toilet (disabled toilet), participators are able to access the service at ease. However, as the accessible toilets in this hospital are located along the passageway which the slicing door is just attached to the main walkway that people regularly pass through, therefore the participators have to mind for people crossing back and forth while getting in and out from the toilet, particularly the blind and wheelchair.

- In the accessible toilets, the participators find no privacy when using this facility because the wall is made of translucent glass and attached to the main corridor with lot of people passing through.

From the summarized results of the audition in simulated situation, and the obstructive analysis caused by the physical limitation of the users with disabilities in the public areas of Naresuan university hospital. The most obvious problem is related with the way-finding system, as the participators often getting lost from direct or consuming more times in finding their destination. This type of problem may considerably cause by; the inappropriate signage system (disposition or styles), environmental design, the decoration style of entrance of each department is considered unclear enough to present their location. Furthermore, the overall of interior design is insufficient for disabilities users such as, no specific materials or equipment available for direction guiding for visually impairment or blind person, the main circulation passage from car parking area into each department within the hospital is insecure or unsafe in various aspects, some feature of furniture design within each department is inaccessible or not inclusive enough for different types of disabilities. Researcher summarized all the results recorded from the audition in combination with the theories of design involved with multidisciplinary design knowledge including the building environment design, wayfinding-wayshowing, interior design for healthcare facility, and the criteria of facilities design for universal usability. Therefore, research

concluded all the studies and brought up the design guidelines to give suggestion for increased level of satisfaction with more suitable physical environment in public areas of this hospital, especially, with the great concern for benefit of disabled users. The simulation features of redesign guidelines are presenting in the following illustrations.

Hospital Approach: From outer approach to inner hospital area

Current feature

Simulation feature (redesigned by Thirawut Bunyasakseri 2015)

Car parking area in front of the hospital entrance

Current feature

Simulation feature(redesigned by Thirawut Bunyasakseri)

Example of the new improved parking lots concern for people with disability and old people. The disabled car park should be located at the nearest area to the main entrance as possible, and each parking lot should provide an extra space for wheelchair user in getting in and out from their vehicle (blue label in the picture). In addition, there should provide a ramp to the building entrance as close as possible, safety rail in associate with appropriate width of ramp also should be concerned. The material surface should be painted with a vivid color for the visually impairment to mind it at ease.

Passage to the building

Current feature

Guideline feature simulation (redesigned by Thirawut Bunyasakseri 2015)

Example: The illustrate shows improvement of space in front of the hospital entrance where this area are actually used as a drop off point for customer. For security reasons, the design suggestion is to install the safety rail to provide separation between walking and vehicle passage, and adding speed bump on the traffic surface, all of new equipments should be vividly painted

by warning colors. In addition, the nameplate and flag of the main entrance should be improved by enlarging the size and the position must be easily seen and visible from a distant.

Passage to the building (2)

Current feature

Guideline feature simulation (redesigned by Thirawut Bunyasakseri 2015)

Example: This illustrate present the guideline to improve the OPD entrance. Firstly, the footpath should be made clearly separate from the road *(purple color area: the color putting in this picture is just for easy notice which is possible to use other color that match with building color.)* Secondly, the OPD entrance sign should be enlarge and set against the sight from traffic road. Thirdly, the cars painted red in the simulation picture should be removed, as the parking here should be forbidden because this area is already busy with a density of crowds and vehicles at the peak period, therefore parking at this area will cause a situation even more chaotic.

Service facilities points such as Blood test Lab, Cashier Counter and OPD Pharmacy

The current feature of the intersection in front of the entrance of Blood test lab

Guideline feature simulation of the intersection in front of the entrance of Blood test lab

Example: The blood test lab should be improved by introduce a new counter at the front side of the main corridor for easily visible, and the counter itself should has two levels of countertop for extend the accessibility to cover more types of physical conditions. Instruction board should be enlarged and reinstalled by the side of counter to make clearer and easier for patient to read. The signage that display exactly at the middle of intersection should be reordered.

Service facilities points such as Blood test Lab, Cashier Counter

and OPD Pharmacy (2)

The current feature of Pharmacy located along the main passage

Guideline feature simulation of Pharmacy

Example: The pictures present the simulation feature of the improved space at the pharmacy for increase more convenient in accessing of people with disability. This is including the tactile paving along the walkway to the pharmacy counter for navigating the blind to access the point on themselves, to emphasize the service point by adding more vivid colors to the pharmacy counter and/or redesign the department nameplate or flag for more easily and clearly visible. Moreover, the lower counter for usability of persons with disability or elderly should be introduced, and may set it on the side in order to prevent congestion.

Corridor halls and intersections within the building

The current feature of the corridor intersection in front of the entrance of Orthopedic surgery department

Guideline feature simulation of the corridor intersection in front of the entrance of Orthopedic surgery department

Example: The improvement guideline illustration simulates the feature of the corridor intersection and walkway leading to the entrance of orthopedic surgery department. The installation of the signs should be located in a position that meets easily with the sight from the pathway, by this illustration the pathway is coming from the elevator hall, so the position of nameplate should be located before or after the intersection. In addition, the signs of each department should use different colors for easy access and recognition as all the details has already mentioned earlier. Moreover, for each department itself, it should be remarkable decorated to create notable character, for simply and easy to remember even view in a distance. As seen by the departments to maintain in this research, each department and service facility are classified in different colors in

accordance with the signage and guiding floor tiles colors harmoniously. This idea will definitely increase a level of performance to the wayfinding as well as the overall built environment within this hospital. Please keep in mind, the information that containing too much or coming too soon can make confusion and be a factor of signage system failure. With the matter of circulation, not only apply specific floor tiles materials to increase navigation for all physical abilities, however the location and positing of furniture also should be carefully concerned and setup at the appropriate place, not block against the pathway, particularly, of the blind or visually impairment person. The unused entrance or non-public areas where are not being used for outpatient should be put on the key or present a very clear sign for prevent confusion and unwanted visitors.

Corridor halls and intersections within the building

The current feature of the main corridor and the cashier counter

Guideline feature simulation of the main corridor and the cashier counter

Example: The design guideline simulated the feature of the navigated Braille blocks which installed by the rim of both sides pathway to avoid from other faster walker. As the Braille blocks are applied in two colors, green and orange, not only benefit for the blind but also for help other users in finding their destination; the orange tag leading the direction from the inner building to the cashier counter while the blue tag is navigating from the building entrance to specific departments inside the hospital building.

Elevator hall and Corridor

Current feature of Elevator hall and Corridor of the hospital (New building)

Guideline feature simulation of Elevator hall and Corridor of the hospital (New building)

Example: The elevators hall is located on the main corridor where is always being used as a decision making point for people after come out from the elevator. As the current feature of surroundings scheme around the elevator hall is quiet monotonic and located on the main corridor where many people usually passing through with speed, especially at the peak period, they are frequently blocked or crashed against other people who just came out hesitating from elevators. The suggestion to reduce the problem from the said causes is to improve the feature of elevators differently from other surroundings environment by apply the colored wall/floor tiles to give direction and a warning sign in front of elevator shutter for guiding people with disability or other people to notice, recognize and access it easier. In addition, the paving materials should be a tactile type that can guide the blind and visually impairment person to see the elevator shutter easily, further on the top of each elevator shutter should be adding a signal, both lighting and audio signal, to indicate each elevator's position and direction of travel for increase usability, inclusively, for people with disability as well as general users. For improve the signage system, this is the best location to install the signage, just opposite the elevator shutters to present information regarding overall directions

within each floor of this hospital, possibly a circulation and configuration floor plan. Moreover, the colors classification system as mentioned earlier should be considerably apply on the signage and wayfinding system, to increase level of performances in term of understanding and reduce time consuming. Finally, please denote that the design and placement of the presentation board of circulation and configuration floor plan should be carefully created and installed with a great concern for covering all physical conditions of users, basically the font, size and color should be readable from various aspects of viewers in term of height and visual ability (wheelchair and visually impairment).

Discussions

From the research study, the most obvious problems accessing the facilities within this hospital were the wayfinding and the density of crowd congested or blocked on the passageway caused difficulty for wheelchair and people with physical disability and functional limitation to pass through. The problems found, mainly were not caused by obstacle of object or placement of furniture, nevertheless the main source of problems caused by crowd congestion on the passageway. As the result, it causes a great problem in finding/accessing the facilities for the users with physical limitation including deaf, blind, elderly and patient dependency. In order to solve or reduce the problems in accessing the service facilities within the public area of this hospital, accordingly, the improvement should be considerably taken in to account and apply to various area of the hospital respectively, including the disabled parking area, specific approaching ramp to the building (for wheelchair), customer drop-off, feature and location of signage, signal and symbol, appropriation of service facility points, in term of feature and location, for people with disability. For instant, the treatment and exam diagnostic departments, pharmacy and other departments should be featured with clear entrance façade and department nameplate/symbol, an appropriate designed counter and other furniture, specific floor tiles for visually impairment people, navigable feature and signage along the corridors/halls/elevators and etc. Therefore, researcher has selected the equipment and service facility areas mentioned above and created a set of design guideline feature simulation illustrations which the

criteria of improvement in this study based on the literature review of (referenced from Wolfgang F. E. Preiser of Architectural Journal, Archnet-IJAR. International Research-Volume 3-Issue 3-November 2009.29-36). Hopefully, this guideline will bring the improvement to the selected departments or be adaptable for increased level of performance as well as satisfactory in other service facilities within this hospital and other benefit related with the healthcare design.

In conclusion, the important issue of this research study has shown that the design with a real equal concern for all people is the foundation of the design paradigm for usability of all physical conditions of people. Researcher believes that the work of design will never be successful unless the designer gives a great concern on the participations of all users. The said process is an important part of the paradigm called "participatory design" which involved with the users' participations and emphasized on the technical processes of design to bring the best level performance for built environment, also can be generalized with other designs in the same context.

Suggestions

The redesign guideline and suggestions for the public zone of Naresuan University Hospital was an improvement guideline created from the process of empirical study from the scenario access audit in the real site with the real service flow. The observation of this operation has recorded that the behaviors of the participants (11 persons with different types of disabilities) are evidentially different from general people. Finally please denote that, all the simulation features illustrated in the redesign guideline of this study have not yet directly due with the sense of aesthetic, but focused on the improvement of functions in relative with the usability of people with disability. Therefore, the appearance image and beauty of hospital is such a sensitive matter that required more studies in various details, for this case we will have to do in the next project.

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2.1 | Universal Design for Accessible Museum: Case of Angthong Legend Museum

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Accessible Museum

Nowadays, many people with disabilities cannot access to museum's display content like other; for example, the visually-impaired people unable to recognize objects in glass cabinet which non-permitted touching or hearing-impaired people who hardship to making the request help from museum staff BelénRuíz, José Luis Pajares, Francisco Utray, Lourdes Moreno, 2008). The facilities in the museum is comfortable to everyone who gets service of museum that appreciate an exhibition content by it easy remarkableness, deployment and hearable from this facilities (Darcy, S., & Dickson, T., 2009). The facilities divide to physically consist of building, road, interior and exterior facilities. For instance giving data of communication and other service by using technology such as information of way that everybody able receives also of which someone who need to use facilities in museum: object, tool, service, and environment to masses (Baldry, 2007 and Bateman et al., 2007) for visiting museum that everybody can do.

The Museum of Angthong Legend is one of site that clearing with interrupts by encouraging policy tourism for all people, at Angthong province. This policy supported to tourism in province that everybody enjoyable. It's proceed by survey Museum of Angthong Legend that each one of invited visible disabled

tourist and persons who use wheelchair for reach physically problem. This survey used architect associational process: check list Building Environments Design Recommendation for All. After survey on site, it establishes opinion stage from people who involve with Museum of Angthong Legend for solving by all means together that not only policy of province, but also formality of designing to apply that everybody accessible.

Principles of Universal DesignRonald L. mace (1941-1998) North Carolina State University, The United State.1) Fairness: the Fairness is useable for everyone without distribute, such as telephone box for normal people and wheelchair users.2) Flexibility: The flexibility for user who able both left and right, adaptation the rise and down based on user's high3) Simplicity: The normal and easy to apprehensive for everyone as picture or caption which whatever knowledge level can reading or not; otherwise, reading English or not. Using sign of picture to international communication4) Understanding: There is equal information which easy for using5) Safety: Durability for mistake; for example, protecting system when mistaking providing 6) Energy conservation: Comfortable inexpert such as using the open faucet raised - press down instead of using twist faucet, And electricity faucet that soften pressed to be instead of tiny faucet that have to wedging it. 7) Space: Size and Location that suitable working it design for the biggest body that hard movement such as lavatorysize that sufficient for he providing consider to disabled who used wheelchair that wants enough area for spiral in toilet.

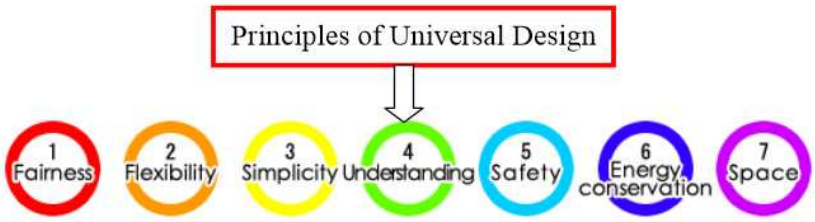

Figure 1: Principles of Universal Design
[Available Online at http://www.pwdsthai.com/files/universal_design.pdf]

Inclusive Accessibility to the museum

Access to museum at an entrance is important part for making impression of visiting both knowing and attitude to there. Disabled tourists put in order of tourist attraction that which place they handy accessible. It spreads widely via online society in this group. The concept designed to everyone that considered for who has less opportunity is the first priority. The human-centered design based on user desire, both physical and mental. The human center's design concept making high advantage using without adaptation Esther Semsei Greenhouse, 2012 :Livable New York Resource Manual) Principle of The human center: the claws who is outside of cycle is chanceless accessibility such as disabled, elder and children. The details design should consider the suitable emplacement space. If disabled accession with general people which the way they can access together. The result of case study museum is proportion way for disabled, mostly isn't main entrance to access. Therefore, the accessibility museum have to both physically and intelligent.

Figure 2: Museum of AngthongLegend 's entrance which disabled entrance has far from main way providing hinder with footpath.
Source: © Copyright 2015 by ChutikarnPingchai

Museum of Angthong Legend provided a ramp to access the building, but it is far from main entrance as well as both of ramps and entrance door are uncompleted. The case study for mocking situation found that trolley disabled unable used ramp by himself; because, it less than 1:12 with non-standard bar.

Visually-impaired people found a hinder of accession that pipeline and iron bar are obstructive. Moreover, it lack of guiding book and warning block.

After accession to museum, the important next to be is information counter which of center point for user using first, request any information. The user should have the right for receiving data that suitable for ability of them. The case studies of Museum of Angthong Legend showing that the counter design is inform both information point and entrance used together. The main idea is starting with chanceless group; not specify group. The visitor can feel movement along equally. It affected to every visitor that making relationship as well. Hence, the design entrance need to consider suitable physically and feeling of user. This is the truly of accessibility.

Figure 3: Mr.SettawutPanyasaewanamit, the volunteer is testing entrance ramp of Museum of Angthong Legend. The ramp prone and non-distance landing that the user can't accessibility by themselves.

Exhibition media for all

Several media create by museum organizer for interesting: the multi-media of content display. Exhibition media and stuff in the museum is the best way or knowing of audience. The case study found that mostly stuff which display are valuable that can't touch by audience. Beside there have script media wall exhibition and touching media. Supposed we considered from constituent in based of display media that is complete, but it can't showing to disabled people; for example, showing object both Visually-impaired people and usual visual are desire to view without cartons or glass blocking the vision. For the visually impaired, it is non-right to recognize the media exhibits that resemble objects that are blocking the display cabinet. The wheelchair user may be inconvenient in terms of sight-media exhibit. The topic of media exhibit in present considered to recognition for everyone. Several museums in

the preparation of model artifacts show up more pieces that made visually impaired can touched and imagined to the objects on display.

From the case study of Museum of Angthong Legend, It clearly saw from the picture of Mrs.NannapatThongpod, The visually impaired can't know what the object is. There has objective of making showcase by close with transparence sheet as historic object needs to prevent damage from exposure. In contrast, it blocked the recognition of the invisible also.

Figure 4: Picture of Mrs.NannapatThongpod, invisible and unrecognized visitor who can't recognize the media exhibition inside museum; because of show case furniture that was blocked by transparent object.

Figure 5: Picture of Mrs.NannapatThongpod, invisible visitor was explained by staff about characteristic of object inside glass box for display.

Some situations have not been solved, such as the invisible visitor; for example, dimly vision or Visually-impaired people. They can't recognize the qualities objects on display; because, there is hinder to recognize. Those problems should to use idea of Reasonable Accommodation to solve. The Reasonable Accommodation is idea for helping sensibly. Officers stationed at various points within the museum have the knowledge to handle the media for

the disabled. The disabled people can access the contents of the by training staff of the museum to given information and assistance to disabled by information. The description of the qualities objects on display in the show case, the best choice for display object in the museum should have design both space and data that can convert between the sender and receiver in the same as data. Because, some information get to some receiver while it can't sent to another receiver. Therefore, the accessibility would make freedom of reorganization. For example, dimly vision or Visually-impaired people, they were getting data from heard and touchedwill be realized through hearing and touch. The visual user but can't heard such as Hearing-impaired people that recognize data from picture and alphabet. The recognition based on type of them.

Besides, the recognized via touched, space design and display media which everybody accessibility must consider physically of display media also for instance the vision from high level of wheelchair people and usual people aren't equally that the wheelchair is less seeing.

Figure 6: Mr.SettawutPanyasaewanamit is testing information counter service in museum,
found that bevel degree of touch screen can't freedom adjust that unsuitable for wheelchair vision.

Facilities for information

For museum visitors, if one requires data and detail related history to give data with voice are easier and convenient for visitor. If visitors cannot visit the museum in time with each other, giving information by voice, a visitor may get incomplete information. In a room of museum, the case study, Museum of

Angthong Legend that content exhibition about history of Angthong province. There use giving media system both picture and voice of data, it design visiting area of one room have to come in one round by limit visitor which effected to visitor who time don't match with each other have to waiting at entrance of reception, The Assistive Technology is solution of this.

The Assistive Technology leading comfortable technology using and …. Instance of Handheld Audio Guides the tool for description to visitor. It solve problem of waiting for visiting respectively to be convenient which able to chosen language or to communicate everyone. Thereby, the space in museum is setting the facilities for everyone accessibility, knowledge of museum exhibition will be even more interesting.

Figure 7: Showing picture of Handheld Audio Guides which service in museum.
Source: © Copyright 2015 by Orpheogrouphttp://orpheogroup.com/

The arrangement sign of display information in other site, disabled recognized by technology. For example, QR Code system for received data which surplus the convenient to use those area and data by connected via technology to suitable resource of recognition. It reduce the content exhibition that excessive information to be clearness and apprehensive. The information able to connect than alphabet consists of voice data from visually-impaired people, picture data for Hearing-impaired people, media and multi-language for foreigner. All of information, visitor able to choose by non- reflect to each other. Therefore, establishing massage or contentis continuing.

Figure 8: Mrs.NannapatThongpod used personal smart cell phone receiving data via QR Code
by shake nearly code of it to got data about tourist attraction of Angthong.
Source: © Copyright 2015 by SvitPiriyasurawong

Accessible Space

The space inside museum that everybody accessibility, not only access but also handy in using. The common entrance, corridor and exhibition of museum are wide space exactly. Although, exhibition room might limit and narrow space such as theater room as well as multimedia room cause needed low light for serve limit picture screen, effecting to wheelchair and visually-impaired people or clear less vision in low light. For wheel chair should consider the moving way and rest point when watch media in large quantity.

Figure 9: Wheelchair testing can't access to exhibition area at 3D media room. Because of obstructive from furniture inside room, the way are narrow as well as non-point of rest for wheelchair.

In the case of visually-impaired people and less vision are use technique of guiding block and leading light. For example, LED STRIP Lamp for leading that

useable to usual vision can be recognized the area in low light. To prevent accident from crash and move walking in split level area.

Figure 10: AngthongLegend ; the area in low light. To prevent accident from crash and move walking in split level area.
Source: © Copyright 2015 by ChutikarnPingchai

Conclusion

The survey and studying from related theory with facilities museum was found the twofactors that are hinder to disabled are Building physically and accession to facilities in museum. The case study of Museum of Angthong Legend there used Principles of Universal Design to analyze each factors of area. For analyzing the level of solving problem into model which composition of model from the chart, it consists of Factor analysis, Solving problem and Feedback from disabled preview.

Physically Building	Accession facilities of disabled	Level of solving problem
Accessing to the museum (Safety)	Information service (Simplicity)	Usage area for everyone (Inclusive Space)
Display media in museum (Understanding)	Assistance Tool for disabled Mock media replace reality display object. Suitable furniture size (Flexibility)	Freedom learning of disabled (Fairness)
Space and Way inside museum (Space)	Free space for rest point of disabled, Looking forward point of elder, vertical movement which comfortable for everyone.	Feedback of preview. by disabled people

Table1: Inferred the method of making model guideline for everyone able to access.

Suggestion

The facilities technology that bring to use by all means, not only facilitate to audience, but also destroy the wall that block opportunity to learning of disabled people. Moreover, it opens the chance for creation new method in the future. If it study about facilities in the title of technology or site design related which will make more patterns design that several dimensions greater than in the past. In the future, museum is the place where everyone can completely access.

The case study of Museum of Angthong Legendmuseum is analyses the obstacle of the museum in things: accessing to the museum, accessing to media in the museum and management area in the museum.

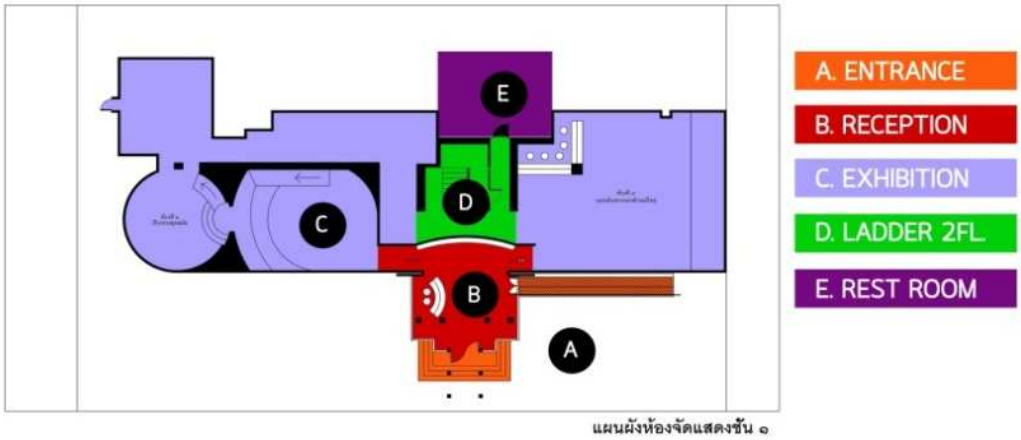

Figure 11:First floor Map : Museum of Angthong Legend

Figure 12:Second Floor Map : Museum of Angthong Legend

Accessing to the museum

Figure 13:Resolution obstacle to entrance the museum.
Source: © Copyright 2015 by SvitPiriyasurawong

The solving of hinder: knowing of media display

The media that displayed in the museum must have mock objects for the blind. Providing, emplacement mock object have to well organized, easy for searching and good facilities to help the blind for accessing media.

Figure 14: Mrs.NannapatThongpodBuy a Souvenir from museum's store by touching and asking details from staff.
Source: © Copyright 2015 by SvitPiriyasurawong

Figure 15: design the media showcase which have more than dimensional that can only receive by eyes
Source: © Copyright 2015 by SvitPiriyasurawong

Emplacement space in the museum

Emplacement space in the museum have to related to the furniture inside it, height of shelf and free space in it for rest point of wheelchair people. Moreover, It is convenience way of traveling such as multimedia room and 3D media room.

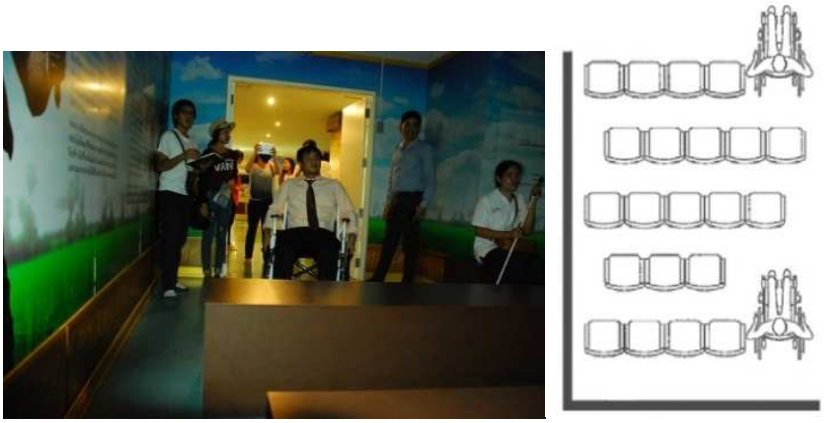

Figure 16:Solutions to solving the emplacement area inside watching a video and three-dimensional media room
Source: © Copyright 2015 by Chutikarn Pingchai

Emplacement area of vertical movement for disabled should facilitate when disabled moving. The case study of Museum of Angthong Legend, there has only the stair to go to second floor, so disabled cannot go to second floor by themselves.

Figure 17:Solutions of solving of vertical movement of the disabled.
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The different paths of the museum

There are many spaces in museum that suitable build the different of paths, interesting without attention a site distance which standard from ministry. The reaction of case study is very dangerous for disabled, needed to adjust the area for solve to be non-hinder in non-step way.

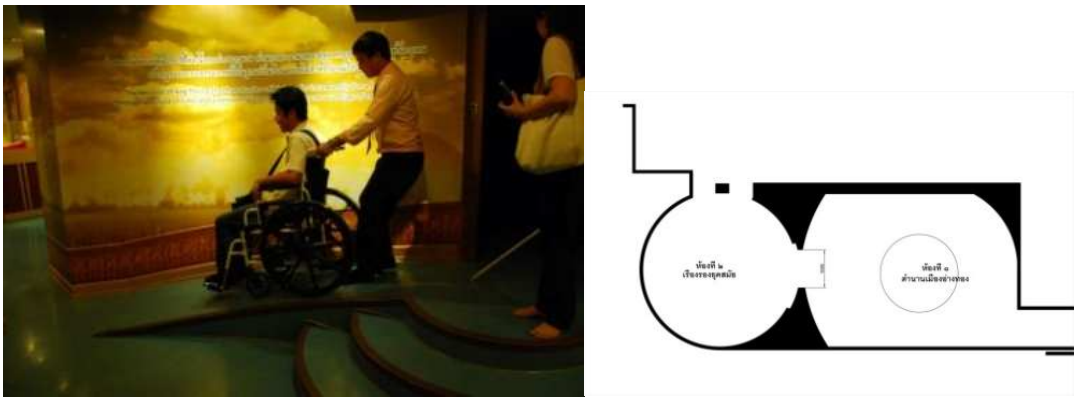

Figure 18:Solutions of solving the non-step way of museum.
Source: © Copyright 2015 by Chutikarn Pingchai & Svit Piriyasurawong

Figure 19 : The case study association of Museum of Angthong Legend. The encourage project of tourism without hinder for everyone, Angthong, Thailand.
Source: © Copyright 2015 by Chutikarn Pingchai

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2.2 |Rethink about beliefs and facilities for the disabled persons to access to the religious places

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The paper discusses about people who use wheelchair and white cane in daily life which are person with mobility impairment and visual impairment. The access to temple in Angthong, at the Mong temple which many obstructions for other place in the temple area. When the method of access to area changed, the environment as well as architecture which of support the access of people with disabilities effectively and safely because the architecture has contributed significantly in creating ease of access to the activities and restructured on demand.

Introduction

In the daily life of people in the past to the present, Temple is very important place to make a merit and practice to make a peaceful mind which is the way that Buddha has teach us for long time. But for people with Physical Disabilities, wheelchair users (Wheel chair) and the Visually Impaired, Rods user (Cane) they required facilities, architectural and additional technology to support applications equally.

To fulfill a strategic development for tourism in Angthong province, consistent with the goals of the Angthong province, there are the projects that try to avoid the inconvenience for people. Thereby, this article will show the concept design that can be applied to promote knowledge and understanding. This

project will design for all in the context of measures to guide the design to everyone, including equality, as well as social reforms.

The concept made for everyone. As a design concept to consider the usage, the benefit coverage for all people and do not need to be modified or special is specific to the individual a group. The design for community started from questions: How other kinds of user have opportunity to equally use this place such as the elderly, sick, pregnant women, dwarf children coming to a stroller, disabilities of various types. No matter the blind, deaf, arms, legs, physical disabilities, intellectual disabilities and so on. Hence, they can live in a society with usual people like normal happiness (Nicolo, Del Castillo, 2009) In short, the environment adjusting places and things to compatible for all members of the society for convenience and safety.

Temple is place of religious. Normally, It is well-known that place for monk to living and building permanent structure, where many relies on the study of the Buddha discipline, Buddha doctrine and assembly of the religious monks, a monk as well as the source to promote art, culture and tradition, which match (Emorn Jearnmass , 2005, p.38 Thanongchai Boonranapitsh 2002;p.1) defining that the temple is one of social institution (Social institutions) and one element of culture (Culture) consists of knowledge, Faith, law tradition. So, the temple is a symbol of civilization and the center of the community in Thailand.

Objective

1. To demonstrate the obstacles of usage and access to a temple area.
2. To present the information for improve temple as well as guidelines for another temple.
3. as a guideline to those people who want to learn about the facilities inside the temple.

Concepts and theories that related to facilities and designed for the disabled

The design concept make facilitate for disabled have started in developed countries such as the US, Japan and many European countries, these

concepts are studied and researched in earnest until the standard is ratified and adopted as the basis for legislation.

The design concept for designed for all people (Universal design)

There are Thai words are used instead of 'Universal design' widely such as people of all ages, the design for the masses, design for everyone, anyone can access and civilized architecture. In this article, we use the word "Design for all people" according to the Association of Siamese Architects under Royal Princess. To avoid confusion and understood in the same design for the ensemble. Starting from the original concept of the United Nations has been trying to publicize and promote the concept to people with disabilities and get the convenience of living in the building and the environment under the Promotion of Non-Handicapping Physical Environment for Disable Persons and has developed steadily Until December 1995, has published the principles of the Universal design.

After a recent update to version 2.0, that was released in April 1997to design for all the people. The concept of environmental design is for creating places and things to different people. In society can benefit from it fully. And equal without for a group and individuals. This principle dedicated to a particular application of this principle can be used to determine the physical environment that already exists. Or use as a guide in the design process, principles of design for the ensemble consists of these seven aspects below.

.1Equality (Equitable Use) available to everyone in society is not divided equally and discrimination, such as the installation of public telephones in two levels of height, the first level for normal people and the second level for wheelchair user.

.2 Flexible (Flexible Use) available to those people who left and right or up and down, adapted by the height condition of the user.

.3 Simplicity and Perspicuous (Simple and Intuitive) such as a picture or a simple description for all kinds of people, no matter what level of knowledge is can read or not can read a foreign language or not,

or they may use a picture as a universal symbol of communication to understand easily, etc.

.4 Sufficient information (Perceptible Information) there has easier information in for using supplementary.

5. Durable activation errors (Tolerance for error), for example, protective systems, prevention system for mistake, providing uneasily damage.

6. No need to use a power (Low Physical Effort) comfortable and less exertion.

7. The suitable size, space and using for user (Size and space for approach and use) by means of figured out the tolerance for people, big body, the persons with disabilities and elder people

The design concepts from hand book of environments for disabilities and people of all ages

Department of Empowerment of Persons with Disabilities Ministry, Ministry of Social Development and Human Security ((2001has published documents and design things for the elder people, disabled, and saddle to various agencies and the general public can read and make understanding simple easily by collect the information from several sources, such as ADA of America and Accessibility of the Disabled from UN, Architectural Services Department of Hong Kong ,Building Construction Authority of Singapore, Code of Practice on Access and Mobility of Liverpool, England, and Barrier Free Design Guideline of Japan, which concept are the handicapped and elder could live with freedom, prestige as well as society debt. The details of specification form the surface of various areas in the building supported to all types of disabled. As information according to law under regulations in direction of facilities inside the building for disabilities and people of all ages.)Panuwat Planglang, (2012

The role of designer for disabled people

As designers, we should be looking to see justice issues and the dignity of the human being and do not judge disabled people are strange or different from the world of common people. The products have to be a good wise designed and realize that the design for the disabled are complicated by the physical differences and be aware to design for the disabled. It also complicates the physical side is different from the design to normal people quite a lot. Normally disabled people are all different. Both the physical strength Illnesses and conditions, making the design need to be adapted to each user appropriately. It must be designed in accordance with the environment creation to international standards of facilitate for disabled people, which the most often occurs with disabilities people who moving by wheel chair which tool is needed much of area unable to access in surrounding space.

Need of changing model)paradigm shift) from supporting to development operation for disabled people.

To change our attitudes of disabled people, many people start from their family level. They will have a positive attitude towards people with disabilities as poor pitiful, nurtured a special person to take care of the rest do not need to use an external endure. "The father - mother managed to ensure" there was plenty for Disability Welfare and Disabled Parenting. There are schools for the disabled where professional training and taking care for these people. But everything can separate people with disabilities to live as the other people. This means that people with disabilities need to have a specific location. They have no right to live among the people is what makes social relief and compassion. I think that disabled people who are incapacitated in our social we need shelter, allowance and so on. you will have to bear all this never ends. But society does not always look to the basic humanity or human rights (Rights base) fact that disabled people are human just complete lack of body parts. The basic human rights of disabled people's needs should be given as well. People with disabilities do not need special permissions. No needs special educational If the institution has facilities for the disabled do not want to touch the surface material and the temple's ramps If the temple provides

facilities to support its use. They do not want to reduce transport welfare if completely facilities. They do not need assist money If the opportunities opening for the disabled to work. The principal is every place must have the facilities to link the disabilities into society for making relationship, education and occupation. There are plenty of living to common life.

The relationship between disabled people and the environment

The Disability Rehabilitation Act of B.E.) 2534Department of Public Welfare, 1991, page (1specify that disabled people means people with disorders or intellectual disabilities or mental categories and criteria prescribed in the regulations .Such as, Vision Impaired People, Hearing Impaired People And interpretation Disabled physically, mentally disabled movement, Intellectually disabled and learning disabled stacked.

The World Health Organization (1980, World Health Organization- WHO) definitions show the difference between failure (impairment), disability (disability) and a disadvantage (handicap) and congenital defects that characterize the syndrome and to identify What syndrome do to a person. The treatment process and restoration attempted to return to normal as hard as possible. The highest point called Maximum potential disruption as a disability, but a relationship with the environment and other factors such as gender, age, socio-cultural and social attitudes. This is a look that disabled people are part of society.

Stone (1971, cited in Gunnari Harnpatthanacahiyakul Development Gurnee, 2538, page1) the definition of disability (disability) that the persons that have limited in a role and working according to the expectations of society. Which is associated with self-care (self-care), education (education), family ties (family relation) Recreation, earn career, although short-term disability or long-term matter. Harris & Anfield (1990, p.11) has given a different meaning that people with disabilities are people with disabilities (impairment) of the organ part or impaired, mentally, emotionally, making it limits the use of parts that are difficult to control. And if people with disabilities are faced with environmental obstacles is not conducive to the existence of these people, it will become people with disabilities who are living with disabilities.

National Clearinghouse on Family Violence, and Government of Canada said that the definition of disability does not depend on the level of disability awareness of social amenities to the people in society who are different, as citizens of the country. Society must encourage people a chance to show their potential and to participate in society, to remove barriers and obstacles of various types by focusing on the strategic development of services and social development.

Commission of Economic and Social for Asia and Pacific (United Nations Economic and Social Commission Asia and Pacific- -UNESCAP) has announced the Asia-Pacific Decade of Disabled Persons of the Year 1993 - BE 2545 (The Asian and Pacific Decade. of Disabled Persons, 1993-2002) said that disability issues are affected by poverty and globalization social issues People with disabilities have limited access to education, employment also dropped out of society and the economy. In addition, media technology Information is also developing rapidly. Therefore, the Commission for Economic and Social Asia and the Pacific (UNESCAP) has a strategy to promote the participation and full equality of persons with disabilities in the process of planning national development (Kim, 2001, p. 1 claim. in Saowaluck Thongkaowe, 2010).

The disabled people, which is normal person (human being) cannot reach the man-made environment in the cause of people with disabilities are excluded. Were excluded from society in every sphere of life, it is not unusual, according to the nature of the basic human needs. Therefore, disabled are need to who related considered about suspicion, movement and access. The reaction of impairment (impairment), disability (disability), and the lack of facilities for disabled (accessibility) to be overlook from society (invisible) and single disabled society lacks of opportunity to participate in the mainstream (mainstream) of development. Moreover, society and community are negative attitude and low estimating to disabled people than usual people. (Khan, 2006, p.6 referred to Saowaluck Thongkaowe, universal design concepts and fair, 2010).

Referring to (Training for Trainers: Disability Equality Training, 2005, McLaughlin K, Malaysia. Promotion of Non-Handicapping Physical Environments for Disabled Persons:

Guidelines ((1995cited by Saowaluck Thongkaowe, universal design concepts and fair, 2010 (defines by these reasons below.

(1) Disability (Disability) refers to the limit or no ability, which was the result of a lack of organs in any part of the body that control functions are limited compared to those without disabilities. Some disability may be temporary. Some kinds of disabilities are permanent but it might come back again, and some can be treated. And unleash our full potential enabling people with disabilities to invite disability, a byproduct of the environment that hinders it.

(2) Defectiveness (Impairment) refers to impairment, loss of mental and physical disorders, loss of ability to control or limit the functioning of organs and intellect. This includes the structure of the body organs missing. Or more people. Therefore, it is impaired people not only about the environment.

(3)The missing opportunity (Handicap) represents the result of a defect, disability and limitations that hamper their work. Duties that people generally consider that it is normal for human beings.

So the loss of opportunity (handicap) is the relationship between disabled (person with disability) to the environment, culture, and most importantly barrier (barrier) the physical in social environment of man-made (build environment) the levels of advantage you would rather have a direct relationship or varying levels of environmental problems.

The affect from human artifact environment in the temple

The human artifact environment (built environment) is the natural environment where physical appearance changed by humans. This dimension is created as a public or private and for the sake of living in the living space and the possibility of facilities is limited. There are no barriers to accessibility what are the barriers that disabled people face in the temple is divided into two

fields below. The impact of physical facilities, building, location and public transportation are built without amenities. Supposed It have that wouldn't work as well. The impact of faith is doing not step on the threshold. The belief is that the threshold should be respected. There is something haunt in threshold and believe that is the guard of the land when he crossed the door must not be tread. This belief gradually faded from memory. The idea of people present now. Initially the elders will teach manners to be polite, gentle walks by every stride. Only the door the threshold will be placed inside a timber blocking the door. A mortar holes for pivot doors. And the wedge bolt or the earth means earth or land is a term often used in Mother Earth hailed the door or door that creates a threshold. In some places it is called. In Hinduism it is believed that the spirit that dwelled the entire house to protect home and bring happiness to the residents, which protect from any disaster. Therefore, it is prohibited to walk over the threshold. Your toes touch because the threshold is treated as a holy. According to folklore tradition is originally of Thailand. The threshold is usually painted red or palaces always the same color lacquer. Time is out with another piece of plank placed upon them. The beautifully painted lacquer ground waste. Some of trust that is at the threshold or spirits that you are the keepers of treatment is known as Gurudwara guard of threshold. There are nine kinds of these sprits such as Gurudwara guard of threshold, spirit houses. Spirit door and head stepladder, so do not step on the threshold. If the threshold is large, it cannot be across. In addition to skipping by used a wooden bridge across to the face off the door, the solution by removing a piece of wood over it. Thereby, the solution is not to step on the pedal threshold. To consider a tradition in cause and affect are found in popular home do threshold for the front door to indicate the territory as part of home and outside the home. In addition, the threshold is also the virtual dam, water, dirt or other dangerous animals to enter the house. In case that need a threshold. The area in front of the must be higher from the lower side. The threshold will help prevent water. Or dust to blow into the house. In addition, houses in the past often located near the river. Crawl to fell into the water so popular to raise the threshold as high level.

Buddhist ordination tradition, there is a warning symbol that "Naga" will be the Church that can't step on the doorstep. This is to warn that the Naga are stepping into the territory of the monk. Need to commemorate their status and keep clam, the threshold at the church or building inside the temple is a sign that represents a barrier to the territory In order to not disturb the monks who were prayed for Buddha.

The tradition of Western about the threshold is also seeing as well as to carry the bride over the threshold that was a part of the couple just married. Which may assume the coming two factors is a willingness to lose her virginity, and suggests in action.(Boonkhom Chaipromwongsa, Tradition folk tales story, Bangkok Insee, 2545, Phaya-anumanratchathana, The beliefs of Thai house in the past, Siam Araya.2536,2(8),68-70 refer to Duangkamul Aunjiti, 2010, The Beliefs of threshold.)

The case study Mong temple: The project of encourage tourists without hindering for everyone. Mahaminh Sakayamunee Visejchaicharn, statue stands 92 m (300 ft) high, and is 63 m (210 ft) wide. Construction commenced in 1990, and was completed in 2008 which enshrined in Mong temple, AngThong province.

Figure 2: The Mong Temple map

Figure 3: The example of hinder in environment as well as the process of solving.

Car park

Figure 4: No car parking space specific to disabled.

Figure 5: The process of solving: Car parking

Allocation disabled car park space is rectangle shape wide over 2.40 meters, long over 6.00 meters. The side area of car parking at least 1.00 meters that definite label.

Flooring Materials

The pavement is unsuitable to small wheel of wheelchair. The main entrance should use smooth material which steady and prevention slipping; for example gravel suffer that indifferent touching for blind.

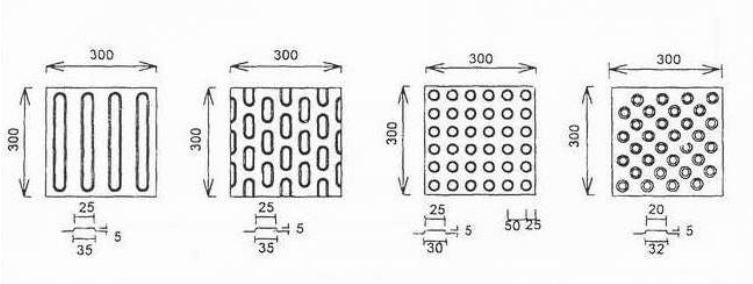

Figure 6: The process of solving: Flooring Materials

Resource: http://www.disabledpersonspenang.org/access/tactile.htm

To use guiding book and warning block to be comfortably blind.

Figure 7: No label and symptom leading way.

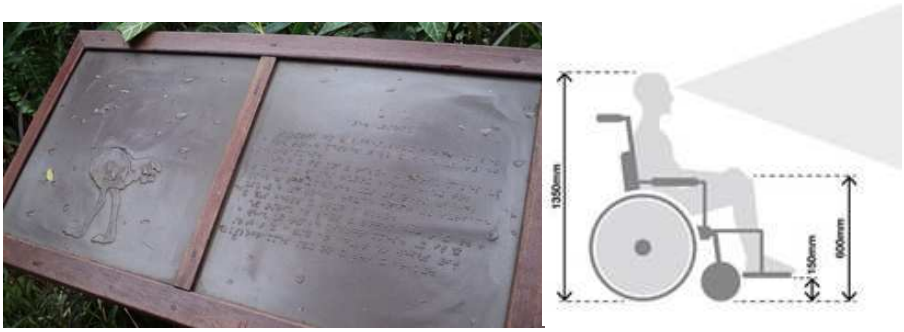

Figure 8: The process of solving: Car parking

Resource: **http://www.bloggang.com/**

To install labels and symptoms in easily see and touch. The seeing is clearly with Braille alphabet, and touching is close distance with standard high 900-1800 mm. as well as alarm.

Figure 9: Church

Figure 10: the main entrance of church isn't smooth step ladder which no grab bar.

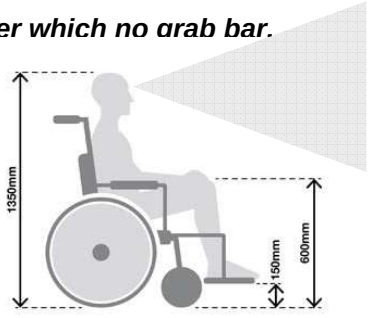

Figure 11: The process of solving

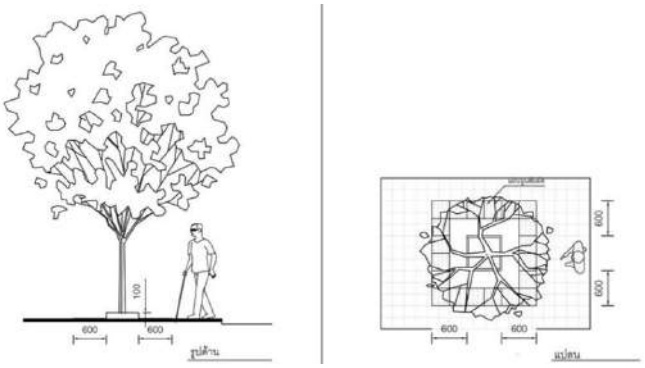

Figure 11: Refer to the Practical Guide Architectural design environment and facilities for all

To install the equipment platform lifts to comfortable for trolley user or adding ramp ratio 1:12

To install the guiding book or leading way to know when changing level by color and material which blending to temple former material.

To enhance iron sheets or planks which lean to ladder that close by carpet. There are solving methods that unloose deforming of architecture.

Figure 12: church area is a lot of tree and object which obstruct a footpath without barrier.

Figure 13: Refer to the Practical Guide Architectural design environment and facilities for all.

Solution

Need to have sheets of touching the hinder of disabled. There start from warning before goes to hinder at least 600 mm.

Figure 14: The access ladder is very steep without both of ramp and bar.

Solution

To install the equipment plat form lift to comfortable for trolley user or adding ramp 1:12

To install the guiding book or leading way to know when changing level by color and material which blending to temple former material.

To enhance iron sheets or planks which lean to ladder that close by carpet. There are solving methods that unloose deforming of architecture.

Process of reaching data

The reaching data is survey by oversee using area, relation of using area, accession of using area. There distribute to be 2 groups are experimental group and notes group. The access survey part of temple that the blind used a cane and researchers used wheel chair for knowing the fact of problem.

The feeling of trolley is too much difficult. Many eyes on us are subsection. I'm great and blissful to be disabled user. It makes me know the lacks of creation of facilities aren't mind and knowledge. As some firm which has full of facilities still work with uncover and unsafe.

Conclusion

According to passage, we can see the efforts to create equality of social coexistence between usual people and disabled people. As design concept for the ensemble to freedom of access temple environment will be a sequel to the equal of disabled meditate, cultural, heritage and traditions .Including the Dharma which is essential to the disabled, mentally disabled accept changes made to see the value and dignity of their own. The extremely vigilant on the issue of equality of disabled in Thailand, the public, private sectors and relevant agencies should be vigilant for development the equipment and services.

The disabilities are effect from body, but inefficient social activities in daily life is effect from environment. We would not deny that the environment in the context of temple architecture, which architecture is suitable for use from a wheelchair (Wheel Chair) and Zimmer (Cane). We always try to look back on that, if disabled movement and visual disabilities are not the least of society but most people. Supposed we all have wheelchair (Wheel Chair) and the staff (Cane) architecture in the context of temple would continue to be present or not. There will be the ramp designed to have a length of 12 meters up to a height with only 1 meter like today or not. There will be designed to use space and walkways to the surface or not. This is the only question we should be asking ourselves before designing the architecture for use within the context in the temple equally. We should adjust the attitude of faith such as the main entrance of the temple should watch out the threshold, look back to many people who want to use the space, but they have physical barriers and faith that resistance. It's the right time for us to overcome these barriers together.

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2.3 | Future Housing for Thai Generation Y Older Population

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> ***"When the living patterns of the elderly have changed from the traditional into the single family and a group of Thai generation Y, who cling to advanced technology, computers, and the modern ways of life, are approaching to the Super Age Society, how can they adjust their housing to suit their modern life?"***

Situation of the Thai Older Population

According to the report about the situation of the elderly in 2013 by the Foundation of Thai Gerontology Research and Development Institute, it is revealed that the number of older population, aging over 60, is up to 9.6 million or 14% of total Thai population. Moreover, within the next six years, Thai current society will be transformed into the Complete Aged Society and the number of elderly population will be reaching up to 20% of total population in the year 2021. Finally, in 2035, the Super Aged Society will be manifesting with 30% of the elderly population as a whole. Similarly, many countries all over the world are approaching to aging society as well, and the countries that have the height ratio of elderly population are Japan, Italy, Greece, Germany, and Switzerland. These developed nations are entering the Complete Aged Society in the year 2006, 2007, 2012, and 2020 respectively.

Hence, the purpose of this article is to study and review the situation of housing for the elderly in the present and the demand for goods and services of Thai generation Y, who are entering the Super Age Society within the next 20 years in order to show the importance of and cope with designing the dwellings, congruent with the habits of dwellers when getting older in the near future. Because of the rapid expansion of Thai elderly population and the rapid social changes of Thai households, especially in the metropolitan areas that have the limitation of living spaces with, nevertheless, the convenience of transportation and lots of facilities, condominium is the most popular habitat for a group of Generation Y. Nevertheless, how can this kind of modern housing accommodate the retiring life of those aging people with happiness and sustainability?

Thai Older Population Living Change

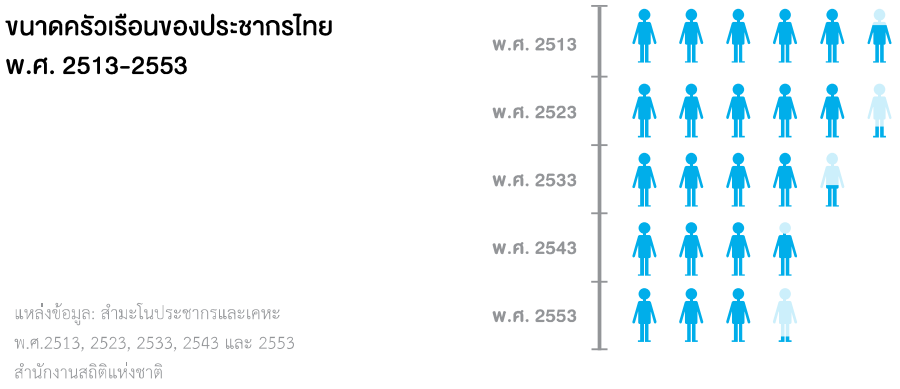

Figure 1 shows the chart of proportion of Thai households from the year 1970 to 2010

Source: The Foundation of Thai Gerontology Research and Development Institute

According to the survey of census and housing, it is reported that Thai households have been shrinking in size. In 1970, each Thai household composes of 5.7 family members; however, in 1990, each household has reduced the family members to 4.4 and 3.1 in the year 2010.

This situation is responsible for changing the patterns of living of the elderly in Thai society. In addition, because Thai at the present are likely to be single

and a couple has yielded a fewer or no offspring. The elderly, therefore, are prone to live alone; or else, they have to depend on the married couple merely, forcing them to take care of themselves. In Thai society, nursing the elderly is categorized into Institute Care: Nursing home and Residential home: and Community Care/ Home Care so that those elderly are able to perform daily lives, have a meal, and adjust their own housing. Also, the environment of housing plays an important role in supporting the elderly to do daily routines with independence and pride so that they can adjust themselves to the changing situation of dwelling in Thai society with ease (Situation of Thai Elderly, 2013: Foundation of Thai Gerontology Research and Development Institute).

Generation Y and Consumption Habits

Generation Y, Gen Y, or Why Generation is a group of people who were born in 1980- 1990. Likewise, it is expected that, in the year 2010, the number of Gen Y population will account for 10 million or 16% of total population (NationalMaster, 2010: Online). This group of people were born when the country was in peace and grown up along with the great changes in social, economic, and political environment, as well as the advance of technology. They have already been the working people, who have self-confidence, desire independence without any rules or regulations, and prefer direct expression. In addition, they invariably catch up with the new fades and often get bored with everything around them easily at the same time. They are keen to keep the current events and the advanced technology updated, as well as are expert in using many advanced communication devices, such as IPhone, IPOD, Notebook, or even digital camera very efficiently. That is why a group of Gen Y is so adventurous, highly fashionable, together with the feeling of self-confidence that they are dare to be the leading consumer with idiosyncrasy (Chatchawarn, 2012: Online). Generations Y is also obsessed with them, clings to their friends, copes with many tasks simultaneously, speak loudly, and are always optimistic. The marketers deem Gen Y as the target population of consequence in the modern era (Sara-dede.com, 2010:Online)

As for the marketing plan in the present, Gen Y is a group of working people who have the full potential for buying goods and services and advancing their paths of career. Therefore, they are going to enter the Great Generation. Nowadays, the habits of consumption of Gen Y are totally different from those of Gen B and Gen X in that Gen Y are hot-tempered, rushing to get everything done within a short time as they believe in their own capacity. In addition, the reason for buying goods and services of Gen Y comes from mixed reasonable reasons. For instance, they choose to purchase any goods and services because of their preference, the modernity, and modern styles; therefore, they always use both emotional and logical reasoning, based on their reliable and thorough information from many sources, to buy each material with great attention. In this condition, Internet is such an important tool that Gen Y uses it to search all detailed information of goods and services before purchasing. The unique habits of consumption of Gen Y are as follow:

Preferring to purchase by searching for many ways to acquire that goods, but denying traditional shopping

Being fond of entertainment

Loving colorful lifestyles

Favoring lively and vivid environment

Having the behaviors of multi-tasking

Neglecting radio and television, but paying more attention to wireless social media and internet communication

Having brand loyalty less than every Generation

Challenging technological change by thinking in a positive way

Should the situation of the elderly go through the ways mentioned above, Gen Y are likely to generate the Super Aged Society, requiring to adjust the housing in according with their unique lifestyles, composing of living in the city center with convenient transportation systems, full facilities, and modern shopping centers and easily accessing to the main activities when they are

getting older. Because Gen Y are rather active, the ways of retiring life of them are less likely to differ from their modern lifestyles. As for buying the property, they have to consider the factors influencing the ways of retiring life that they still have buying potential and how the modern housing is appropriate for this condition.

The Development Center for Welfare of the Elderly: Bangkae Home Foundation

In the past, nursing the elderly was the patronage contribution, such as the older nursed at Bangkae Home or Bangkae Home Foundation. This was founded in June 1st, 1953 when Field Marshal Por Pibulsongkram was the prime minister and it was deemed as the first foundation for the elderly in Thailand to support the older people in accordance with the social welfare policy of the government. This foundation began operating when Mr. Prakorn Aungsusing was the director general of the Department of Public Welfare. Until 30th December 2003, Bangkhae Home has changed the roles from the operating department for nursing the elderly to be the supporting department for the welfare of elderly society, named "The Development Center for the welfare of elderly society of Bangkae Home". The reason why the older choose to dwell here is that they are deprived of family support and do not want to be the burden of their offspring; besides, they cannot eke out the living by themselves. On this ground, the older are left no choice to live here regardless of their willingness. To live in Bangkae Home, the elderly need to obey many strict rules and regulations with clear punishment, in addition to doing daily routines and being visited by their relatives. Nevertheless, the social workers inform the elderly residents these strict rules in advance and they insist that most rules and regulations can be adaptable and lenient, depending on the certain situation. However, this practice inevitably has a profound effect on the emotional health of the elderly, their freedom of life, and their honors.

> ***"In the past, the residents here were fewer than today. However, more dwellers more matter! When I reside here for the first two days, the social workers informed me what the elderly residents can do. If anyone infringes***

the rules, he or she will be fined 20 30 40 100 baht and the officers take that money to put into the box. Look at there. That is the room of the officers here. At night, we cannot talk loudly and turn on or turn off the light by ourselves; so, we have to be patient and lay everything down when living here by always preying and worshipping the Buddha"

(Ploysai, 80 years old).

"We have to learn and obey the rules and regulations here by ourselves and we can learn these by the former roommate who live here before the new comers. Some rules order us to clean the toilet and the bedroom. Sometimes the officers tell me to dispose the food they think it spoils, but I think it is still edible, such as chili sauce. Besides, when we make a little turmoil, we will be fined the money. Also, when the guest gives me the money, I cannot keep it by myself, but the officers themselves will keep that money gift instead. I used to be scorned by those officers and they have the authority to allow me whether to go out or not. Some of them use a rough word, other than the female cooks who are so kind."

The ways of life of the elderly are evidently prescribed here, including their daily activities, regardless of the willingness of the residents. These restrictions are determined by the standard structures, like other housings, which are rather stringent and inflexible. The areas here are divided into specific sections as follow:

Figure 2 shows the bedroom of the older residents at Bangkae Home

Source: Annonymous Annonymous(2007). https://www.l3nr.org/posts/31248

The bedroom is divided into three floors; the second floor is set for the unhealthy elderly who cannot walk up and down many ladders. Ten older residents are allowed to live in one bedroom with the bed juxtaposed with a small cabinet and the narrow sidewalk in the middle of the room.

The bathroom for the elderly is in the opposite of the bedroom. It is divided into two sections, the bathroom and the area for hanging clothes. For this section, there is a shared bathroom with the cement pool for retaining the water for ablution. This bathroom also has the area for washing clothes with the water tap installed at the lower position. In addition to a shared bathroom, there are still two small bathrooms with a shower available for some elderly who prefer to bath alone. Next to the two small bathrooms, there are the two toilets. Besides, three washbasins are orderly arranged in front of the two small bathrooms. Additional toilets are put near the restaurant. The elderly here also use the service at the Thai music room at the first and second floors in the Japanese building.

The dining room is in the first floor in the old building. Within the room, the big stage is put in the front and the set of altar table is put on the right side. The benches and chairs for the guests or outsiders, who come to set the extra activities, are placed beside the stage. In addition, there are still the square

tables covered by the green tablecloths, setting in a row. Under the square tables, there are the shelves for keeping plates and spoon and flock

Occupation room is the place which encourages the older residents to spend leisure time doing beneficial activities for relaxation, such as making artificial flora, knitting wool, and camphor sac. Within this room, there are two sewing machines and the cabinets for keeping miscellaneous things. Besides, the elderly who make the handcraft are provided with one drawer table per person to keep the working devices and handcraft items for selling or distributing, as a gift, to the guests who come to set the extra activities here. 25% of the income from selling these items is rationed for the foster home, while the rest of the profits is owned by those working elderly.

The medical room is at the first floor in the new building or the Japanese building. Within this room, there are 28 hospital beds overcrowded. Nowadays, Bangkhae Home is lacking for enough hospital beds to accommodate the sick older residents. The medical room provides the sick residents with the service form doctors once a week, together with the caretakers 24 hours a day.

The physical therapy room is at the second floor in the Japanese building or the new building. Within this room, there is a special area with the physical therapy devices in accordance with the doctors' order, such as the bicycle, hip and leg adduction which can prevent the tendon from kine to chore due to lacking for regular exercise, provided for the elderly residents who come to heal the sick and pain aches. The therapy is provided for an individuals and a group of patients, who prefer to exercise, supervised by one physiotherapist regularly stationed here, together with the nursemaids who are the healthy elderly residents to assist the older patients in choosing and picking up the devices for therapy.

The services from this foster home are in form of government welfare, which has 21 places nationwide. Nevertheless, these foster homes act as the sanctuary of the abandoned elderly, but are not designed to meet the physical and psychological needs of the elderly and lacking in the privacy and independence to do daily activities, including good supervision and safety. This condition inevitably leads to the social problems and cohabitation

conflicts among the residents. In addition, due to the problems of stealing and quarrelling which happen regularly, the elderly residents call for more residential dormitories for rent because the number of older users exceeds the number of accommodations.

Condominium for the elderly Swangkanivet

According to the royal project of Princess Maha ChakriSirindhorn, who forecasts the problem of increasing numbers of older population, the Red Cross Society was ordered to establish the buildings to serve the daily routines of the elderly, under the concept, "Life is freedom and has values by self-dependence". This building is located in Bangpu, Samut Prakan Province with the area of 23 rai. It has six floors and eight buildings with 300 units. Each unit has the area of 40 square meters. The total values of this project are worth 270 million baht, with the name nominated by her Royal Highness Princess Maha Chakri Sirindhorn, which means the heaven's sanctuary. More interestingly, after the opening of Phase II in 2001, the numbers of accommodations are not enough for the overwhelmingly numbers of renters.

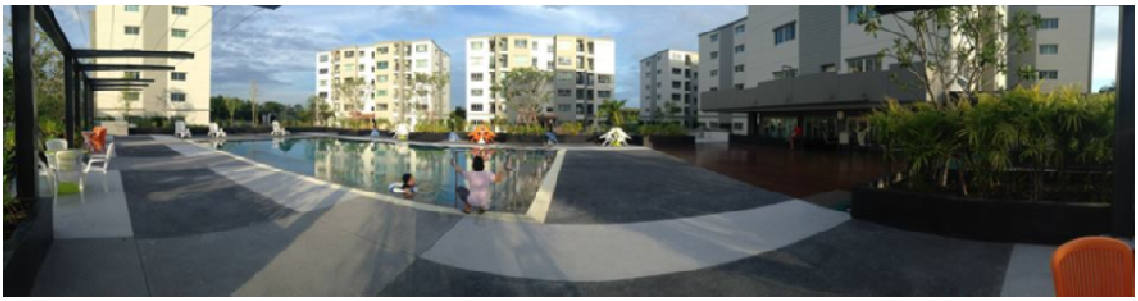

Figure 3 Show an overall view of Swangkanivet project

Source: ***Copyright 2013 by Antika Sawadsri***

This reflects the changing ways of life of the elderly. As for the price, a condominium unite of Swangkanivet initially costs 850,000 baht and the residents have to pay a common free charge 2,500 baht per month, in addition to the cost of utilities. However, the dwellers here cannot transfer the right of living to others. This condition, compared with the past, in that the cost of each unit of condominium for the elderly is 850,000 baht with the right of the

residents to stay here for entire life, except transferring the right of living to the others is less attracting to the customers. However, nowadays, the opening of Swangkanivet condominium, phase II is overwhelmingly well received by the elderly customers who are over 55 years old. This phenomenon indicates that Thai traditional family, plenty of warm family members for three generations have changed into a single family with very few children or even a single child per one family. This situation makes a group of middle-aged persons begin to concern about the living place for them to live independently for their entire life. According to the report by Matichon media online, it is reported that, by dropping in Swangkanivet community at Bangpu, Samut Prakan Province, and lots of members there tell the reporters that they come to reserve the condominium unit by themselves (Prachachat. Net, 2012: Online)

Figure 4 shows the scenery inside the room of one grandmother who is 65

Source: Benjarat L. (2013). http://www.redcross.or.th/news/information/7322

Mrs. Ratchadawan Tungman, who is 60 years old, tells that she never cares about who see her an abandoned elderly and indicates the willingness of the elderly incoming residents to live here, compared with some reluctant dwellers at Bangkhae Home who are induced to live there.

Mrs. Aumporn Kamauk, another customer of this project, tells that she comes to reserve the condominium unit her since the project was unfinished, because she is single and prefers freedom. She also insists that it is impossible to depend on financial assistance from others; so, she uses all savings for her entire life to buy one condominium unit here. Besides, she donates some of her money to purchase another unite for someone who comes to take care of her because she relies on the safety here and prefers to make charitable donation by not clinging to her own procession or her nephew's. She confers the later property to the Red Cross Society because she thinks she cannot bring anything with herself when passing away.

Figure 5-6 shows the idea of creating for the elderly and the scenery of the sample room of Swangkanivet project

Source: Charoenchi J.(2011). http://202.129.59.73/nana/know/250755/condo/condo.htm

The utility space of this project is designed under the concept especially for the elderly, which was designed by Associate Professor Trirat Jarutat, faculty of architecture Chulalongkorn University. For instance, the areas in the room do not use slippery materials and do not have different steps and doorsill to prevent stumbling. Moreover, the bathroom is installed with handrail at the washbasin, lavatory, and sitting area for bathing to support the body. All the doors in the living room are sliding doors with width 90 cm, easily available for entering. Plug and switch are above the ground 90 cm to avoid bending down and have a big size and the light when turning on or turning off. Also, the emergency signals and alarms are installed at the bed and in the bathroom.

In addition to the interior design in the living for accommodating the elderly residents, the environment within this project also is equipped with full facilities, such as the lobby, restaurants, and laundry. Besides, there are the Active Facility, such as dancing rooms, swimming pool for therapy, exercising room, open healthy space and Passive Facility, such as library, Internet room, praying room, and also the Medical Facility that provides the medical room with the nurses regularly stationing and physical therapy room, responsible by the Red Cross Society. What's more, there are the declivity, transportable lifts, and the different colors of building for easily recognizing, small parks, open exercise yard for relaxation and comfortable living (redcross.or.th, 2011: online)

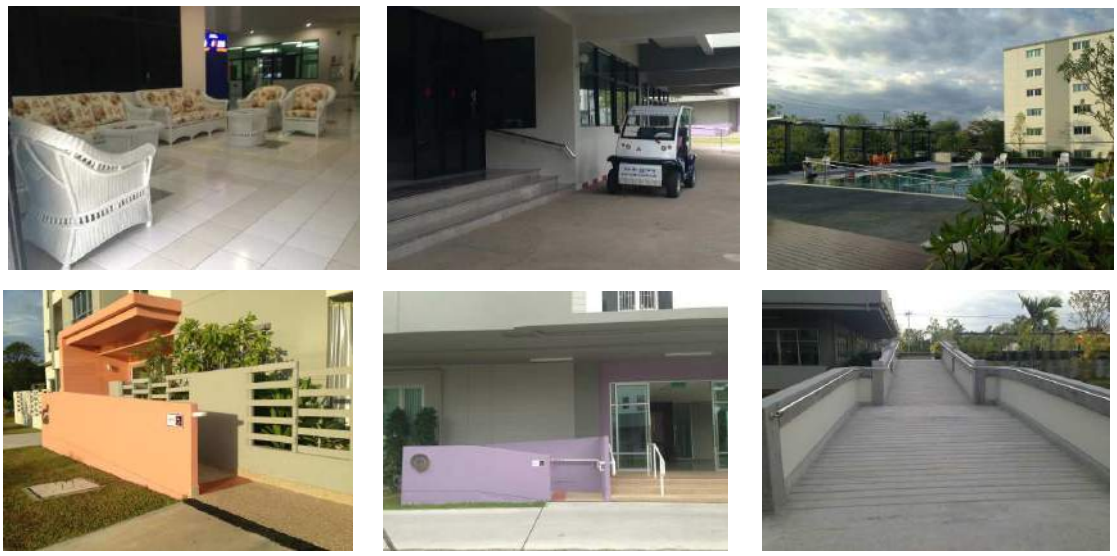

Figure 7-12 shows the facility within Swangkanivet Project

Source: **Copyright 2013 by Antika Sawadsri**

Case study: L.P.N Development Public Company Limited

Mr. Phichet Suphakitjanusan, the executive of L.P.N Development Public Company Limited (LPN) reveals the concept of happy family or Pleasure Family, defining the combination between traditional ways of life in the past concerning care and generosity and the modern busy ways of life in the city by designing special spaces for the family, which is piloted by the project of Lumpini View Naklea Wong Amart. Nowadays, the zones of Pleasure Family

with full sets of furniture are on sale with the initial price 2.29 million baht. In addition, the company is opening the same project in Bangkok, such as Lumpini Park Rattanathibet, which may be more costly because of the high price and cost of the land, but is near south purple line of the sky train. The residents can enter to live in here at the beginning of the year 2015. Lumpini View Naklea Wong Amart is the condominium with 20 floors, located on the Pattaya - Naklea Road, with the total area 12 rai. This building begins with the G floor, which contains parking lot, the lobby, shops, juristic person condominium, engine room, multipurpose room, and multipurpose garden, followed by the second and the third floors, which are also the parking lots, available for more than two hundred cars. The 4th -20th floors are set for the living rooms with 532 units and 2 units of shop rooms. A single room has the space 26-39.50 square meters with full facility.

Figure 13-14 shows the overall blueprint of the scenery of sample room of Lumpini

View Naklea Wong Amart Project

Source: Kobkid.com. (2014). http://www.kobkid.com/forum/index.php/forum/show/41.57344

Mr. Phichet explains the idea of building of community model, "At first, Pleasure Family is the concept to develop condominium for improving the quality of life of the elderly by realizing that the number of aging population is increasing more and more, leading to rising demands of accommodation with good quality of life. However, according to the experience form running the project for the elderly and the results from the research and development

department of the company that records the statistics concerning the lifestyles of the elderly, it is found that most of the elderly prefer to live among the younger to feel alert and active all the time and share activities with them. Therefore, the development of condominium is created to serve the needs of family members of all ages. And, the concept of Pleasure Family is applied for the 4th-6th floors by design the living rooms with the details of Universal Designs to suit the lifestyles of the elderly.

> ***"Setting the activity aims to encourage the elderly and the younger to participate in many activities. Without these activities, the elderly do not have the caretakers to look after them and the younger do not realize how the elderly feel. So, they are asked to join the funny activities altogether to generate the new ideas. "When the children who live in the same condominium miss their old parents, they can come down to visit those elderly anytime."***

The living patterns and the management of the project we develop are under the concept of Pleasure Community, while the projects at Pattaya and Rattanathibet are the pilot plans of community which will be applied, in the future, to other condominiums which take care of the elderly. In term of the facility within the L.P.N project, it will be changed to serve the real demands of the customers and market demands every three years.

The living rooms, which, such as, have the space 34 square meters, are especially designed for the safety by installing handrail in the bathroom, in case of using the wheel chair. Within the room, all material must be rounded without edge and there are an emergency button for urgent help and the central areas to do activities within the family, such as shared kitchen, the space for watching the movie, karaoke room, and the library, cooperated by TK Park to have the children to join here. All rooms are the central property with air conditioners. Likewise, there are outdoor activities for improving the living standard of the residents.

Figures 15-16 show the view of the sample room of Lumpini View Naklea Wong Amart Project

Source: Kobkid.com. (2014). http://www.kobkid.com/forum/index.php/forum/show/41.57344

Figures 17-18 show the samples of facilities within the living room of Lumpini View Naklea Wong Amart Project

As for the services, the company has built the healthy rooms for the residents with the officers on the duty 24 hours a day and nursing assistants to cope with the emergency case occurring in the living room. If the emergency signals work, the patients will be carefully transferred to the Bangkok Hospital Pattaya. All of these facilities are designed with the purpose to improve the living standards of the residents within Pleasure Family and respond to the real needs of them at the same time (Manager Online, 2014: online).

Conclusion

According to the study of the current situation of the Thai elderly, it is found that Thailand is approaching to the Super Aged Society within the next 20 years when the Gen Y is retiring. However, these people can afford to buy

housing by depending on the current potential to find the money. Also, Generation Y is more likely to be unmarried or to have a single family, but they prefer to have a society and look for the city life with full facilities as well as participation in exciting activities. When studying the housing for the aging dweller at the initial period, it is found that the elderly was taken care of in form of the patronage support. To accommodate the elderly living in this situation, the real needs, not only physical but also psychological of the aging residents are not actually served and this undesirable condition has been extant up to the present time.

At the present, Red Cross Society and the private sectors initiate building the project for the habitats of a certain group of aging dwellers that have enough potential for buying the property. The housing of the pilot project is designed by considering the utility of the elderly so that those aging dwellers can do daily activities without physical obstacles and get primary medical health supports. Nevertheless, this sanctuary is located at far distance from the capital and does not truly accommodate the real needs of Generation Y, who are going to be the elderly in the Super Aged Society. Moreover, the interior aspects within the project have obviously segregated lifestyles of the elderly from those of other groups, which cannot be virtually consistent with the social cohabitation. The housing designed to locate at a distance and far from the younger does not precisely accommodate the real needs of the aging dwellers.

This article mainly intends to review the literatures, concerning the design of housing for the elderly and the basic needs of Generation Y. The author, hence, proposes to conduct the deep study to investigate the real needs of housing of the older Generation Y in other aspects further.

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2.4 | Equality and Inclusion for “Little People”

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When we think about the person with disabilities often refer to a person who defective about some part of the body or blinded. Some people are not defective but they have smaller size than average of normal person. In Thailand, some doctors have the opinion that they aren't the person with disability, not suitable for helping. But in some companies have the opinion that they are the person with disability, not suitable for work. This article has mention for the little people or we know in term "dwarf".

Dwarfism?

Achondroplasia is the most common form of short limb, dwarfism in human beings and it is a "genetic (inherited) condition" that results in abnormally short stature and is the most common cause of short stature with disproportionately short limbs. The average height of an adult with Achondroplasia is 131 cm (52 inches, or four feet four inches) in males and 124 cm (49 inches, or 4 foot 1 inch) in females. Although Achondroplasia literally means "without cartilage formation "the defect in Achondroplasia is not in forming cartilage but in converting it to bone, particularly in the long bones. Achondroplasia is one of the oldest known birth defects. The frequency of Achondroplasia is estimated to range from about 1 in 10,000 births in Latin

America to about 12 in 77,000 in Denmark. An average figure worldwide is approximately 1 in 25,000 births.[1]

When everything seems like a normal person that short and fully capable, so routine and the basic need of theirs are similarly to normal height person. Whether it be using in spaces or access to the public service from travel to work and usability in the public space. These things are directly effect to the pattern of their life.

Identity politics has been good for people with disabilities. For fending off prejudice, finding community and organizing politically to win things like universal wheelchair access and an accessible cash machine, the rhetoric of pride and rights makes sense. But insisting that deafness, for example, is an identity rather than a disability leads to political and cultural conflicts other communities don't face. After all, nobody tries to cure women of being female, and only a few cranks are still working on homosexuality. Genetics and medical technology are, however, gaining on disabilities. Is deafness an identity that needs protecting from doctors? Who gets to say so? To these contentious questions, another is now being added : Should dwarves be accepted or made taller? Is dwarfism a defect or a destiny? [2]

Society of the "Little people"

In present day, the society have begun to modification factor about environment of public area is increasingly more than in the past. It is the ramp in the areas that varying floors lift or grab rails at various points, including in the bathroom. So the modification of environment is good impact for the dwarfed. But in fact, there are some factors that make this dwarfism do not to live together with normal people in society. Whether it is barrier to travel on public transport and the attitudes of people in society that have to adjust concurrently with modification of environment. So, in the future these people

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1 ***www.medicinenet.com/achondroplasia/article.htm#what_is_achondroplasia***

[2]ty politicsDwarves meet identi : David Berreby
The following article appeared in the April 29, 1996, issue of "The New Republic".

will have to live with others people in society equitably and sustainably. Without feeling alienated anymore.

Meanwhile in the USA has established the organization that calls "Little People of America". LPA is a non-profit organization which provides support, resources and information to individuals with dwarfism and their families. Membership in LPA is limited to people 4' 10" and under, or those with a diagnosed form of dwarfism, their families, or those who "demonstrate a well-founded interest in issues relating to dwarfism" ,and founded in 1957 by Billy Barty. LPA is the first North American 'little people' organization, with the Little People of Canada (LPC) incorporating in Canada in 1984.

"LPA is dedicated to improving the quality of life for people with dwarfism throughout their lives while celebrating with great pride Little People's contribution to social diversity. LPA strives to bring solutions and global awareness to the prominent issues affecting individuals of short stature and their families." [3]

Figures 1 a group of "LPA", USA

This project was being developed in many countries like USA, Canada, Britain, including Uganda. By intent of these projects, was focused on sustainable development for the little people.

On the other hand, in Asia Kunming, China they have the project for these people too. And they named this project as "Kingdom of the little people" This project was established in2009, to resemble an empire that includes dwarfism from all over the country come together. They were opened to visitors by the store entrance fee around seventeen dollars, and sometimes

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3 www.lpaonline.org/mission-

society have called "Human zoo"[4]. But the administrator viewed as a place for a dwarf to be working. The entire environment was designed and arranged specially for dwarfism. Whether the housing, ladder or even furniture. Their activity takes place that includes performances by stunt and sell the gift was made by dwarves

It is a magical land where little people laugh and play all day long. It's a place where no one ever grows up, where everyone is happy and no one ever seems to get grumpy. It might sound like a land of make-believe or a scene from the movie Shrek, but that is the fantasy being sold by "The Kingdom of the Little People", a theme park province that boasts what must be the world's biggest concentration of dwarves: some 140 of them. Aged from 18 to 40 and ranging in height from just over two feet to four feet, three inches small, the dwarves live in a mountainside commune of mushroom-shaped homes and perform a daily song and dance routine for a trickle of visitors.[5]Some dwarfism says

> ***"Our family will face poverty if we don't come to live here. We must continue to farmer or labor because they don't have any jobs for us to do, and the people in society still laugh to us again." [6]***

For this reason makes the most dwarfs are willing and happy to come to life in this realm.

Figures 2 activity in the "Kingdom of the little people", China

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4 ***Kingdom Of The Little People, Will Start Training The Dwarfs To Use Technology www.entrepreneursky.com/kingdom-little-people-will-start-training-dwarfs-use-technology/***

5 *Red Door News Hong Kong* ***"It's small world : The Kingdom of The Little People" www.scmp.com/magazines/post-magazine/article/1512558/its-small-world-kingdom-little-people***

6 ***www.youtube.com/watch?v=S2UgwlNQVPM***

In Thailand, according to the law of the country has divide disability into six categories including

1.*Visually impairments*

2. Hearing and communication

3. Mobility impairments

4. Mental and behavioral disabilities

5. Intellectually disabled

6. Learning disability [7]

In practice, the governments that setup these requirements for screening disabled people only. Because the state has determined that disabled people have registered disabled. For the propose of various welfare and the basic services. And the registration of the disabled must be certified by a doctor from the state hospital only.

In the case of "dwarfism" is suspect that they will be intermsof6articles of the disabled law in Thailand. When we talking about the disease that dwarf. Generally refers to people whose have external organs in normally, and they have normal intelligence, actually their lifespan so as long as a normal person. Only a little shape more than normal person. Sometimes these conditions maybe make a doctor has conclude that 99 dwarfism is not disabled. So these dwarves was dropped from the diagnose system to registration of the disabled in Thailand because their bones are smaller than normal person. As a result, they have pain on their vertebrae and joints easily. The health problems that subsequent are inevitable. And when they were admitted, these dwarves shave to paying all of medical fee by themselves. Because they have not registered as disabled, as a result, they cannot receive aid and welfare from the government .

[7] ***Announce of Ministryof Social Development andHuman Security, Thailand***

"Categories and Criteria of disability"29May2009

By interview with a representative from a group of actor dwarves in Thailand, she said that although their lifestyle is not difficult. But there are some barriers, such as homestead was built according stature of normal person. And they were stay on first floor only, because reason of using ladder. The most travel they use a private car that it was adapted by pedal for dwarfism. But sometimes they have to use to public service, they prefer by taxi. And she said

> ***"Despite of the assistant that is granted travel by the sky train or bus for free, laws not going to use it anyway, because it so very difficult to access."***[8]

In the public area, they usually use the equipment for children, such as a chair, a urinal and a lot of the other accessories. In the part of occupation, she said the most dwarfism, if they were not an actor; they may be sell the lottery or laborer .Because the company's perspective thought they are disabled, so do not get to jobs. She said if they had entered in the entertainment industry, money will makes their life so much better, but that is depending on ability.

Another example, "Mrs. Wong" she is 48 and height 85 cm. when she travel so long distance, she usually uses the disabled tricycle that was donated by some people. But the target is so far from the homestead, she chooses walk to take the motorcycle service instead. She said that the most important barrier for hers is traveling, whether it is the bus or train, because of the high ladder too. And she said

> ***"If I want to take a bus, I have to climb to take it. It's so very hard for me."***[9]

She also said that in addition to travel, a little people still needs more equipment for accommodate their daily life. From daily activities, such as opening and closing the door, picking objects from high spot and in using the toilet .She hopes to see the society understand the problem, for lead to

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8 by representativefrom a group of actor dwarf in Thailand: Mrs. Aolrapin Ounkard
9 by dwarf who sold the lottery : Mrs. Boonyaporn Pewreang

adjusting to the spaces and the equipment for the dwarfism. For the future, when we use the public space, we won't feel like different from other people.

Figures3 some routine of "Mrs. Wong", the dwarf in Thailand, 48 years old

And "Mr. Sawang", he is 37 and height 130 cm. He is a taxi driver. He said that he ever driven more than 10 hours a day, but a couple years ago he often stops his car for take a break much more. Because, the physical contravenes, the convulsions and muscle pain increases. His income is not enough for pay each day. He said hoarding the money for treat the disease is almost the last choice for him. He thought about some dwarfism can't to register disabled, it can be referred to attitude measure of a doctor that towards to them. And he said

> ***"We are people with disabilities who already obviously seen from the physical characteristics. Government should to support or assist us like people in the other types of disabilities."*** [10]

From the cases that were mentioned previous. Obviously, the dwarfism in Thailand not has enough capability for accesses to the resource. As a result, in their daily life they must suffer with a lot of problem. It is reason of environmental, attitude from society, occupation and other welfare. The government can be solving the problems with many factors, and one of them is design.

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10 ***The interview from television, broadcast on 19 Aug 2014, Bangkok Thailand***

Design for the little people

The important factor to mention hereafter, it's "Design". It will become something which support and promote the lifestyle of these people to more efficient and less error. Design and products for the little people have been developed from the past till now. So these things are occurred by technology, human behavior or the other factors. Obviously, product for the little people that was designed for respond the requirement of dimension, such as increasing and abridging with dimension for contributing to the activity of their routine.

For the little people who is the middle class, or in case where they live with family that normal persons included. The most of them will be living in the normal environment and usually use accessories instead adjusting to the environment. Such as when they have to use counter in the kitchen, they usually use the little chair about 20 cm. For higher level they usually use the clamp sticks. About the little people who have wealthy in USA and some EU countries, they usually adjust their environment instead.


Figures 4 example of using the accessories in dwarfism routine

Example of adjusting to homestead environment, "Iris Henderson" she is 59 and height 104 cm. She lives in Cumbernauld, Scotland. She paid around 6,200 US dollars to have the appliances and counter in her kitchen made lower so she can cook with ease and reach pots and pans. And she said

> ***"I have bought most of the things I have to make my life easier myself. I've never applied for any grants."***[11]

[11] ***"Mum with dwarfism says Cameron's cuts are forcing her out of her home" 10 Feb 2013***

Figures 5 the kitchen was modified for the little people, Scotland

One of design for the little people, it is the vehicle. The most of little people who have the money enough for bought private car, they usually adapt the accelerator pedals that they can touch on its. Sometime they usually use the booster seat for better visibility. In the using of public services, it was still difficult for the little people in Thailand, because reason of height, and still not yet adjusting to the environment which earnestly.

Figures 4 example for the accelerator pedals and the booster seat

In Brazil, Volkswagen has produced example car that they call it is "Mini - Gol". It was designed to have declined to 30%, and although it's smaller but devices in this car that completely like the normal size cars, such as radio, dashboard, cushion seat and more. It's suitable for the little people and height less than 120 cm. but it has the problem in some point about actual using in the highway where a lot of normal size cars have.

The standard - sized Gol packs a - liter Volkswagen High Torque engine that outputs horsepower and pound-feet of torque. However, under the hood of the Mini - Gol lives a - horsepower engine that motivates the micro - car to a top speed of only about mph. obviously, the Mini - Gol isn't what you'd call highway worthy, then again it's not exactly supposed to be 12

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www.dailyrecord.co.uk/news/politics/mum-dwarfism-says-camerons-cuts-1647614

12 VW Brazil builds little Gol for little people, 22 Nov 2010


Figures 5 "Mini - Gol" car for the little people, Brazil

Conditions have occurred that lead to solutions. But sometimes there is "The problem of the belief" is an obstacle as well Similarly in some countries that the most people in society whose still emphasize to believe that usually explains the relationship between human and human, human and some place or something else. Sometimes the bad attitude was occurred by the belief of people in those countries. So these things are obstacles for the disabled. Example, The aging woman in Scotland, she is a little people. She said she ever had a bad memory as well, and she don't want to go outside because of its. She said

> ***"I remember, when I was 18, I'm speaking to a woman who was pregnant. When I went to touch her belly, she screamed, 'Get your hands off, I might have a child like you.' I was just a young lassie at the time and left in tears."*** [13]

Although way of thinking in this aspect has ever been seen in the past, even in the western countries where the equality is very important. But today, with development of technology that gives us freedom of thinking, and the communication of worldwide. As a result people in the society have to aware in the changes that everyone are turning to the liberty and equality truly, in the future world.

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www.cnet.com/news/vw-brazil-builds-little-gol-for-little-people/

[13] ***"Mum with dwarfism says Cameron's cuts are forcing her out of her home", 10 Feb 2013***

www.dailyrecord.co.uk/news/politics/mum-dwarfism-says-camerons-cuts-1647614

Conclusion

From the information, obviously the little people needs to basic requirement similarly to the normal height person. And they still want to participate in the society like everyone. The social is still lacking for a good attitude toward them. They were not looked same the other disability type .We usually know that the general disabled people who are normal scale but some part of body have defective. So that difference with a dwarf because they have fully organ and intelligence, but they have physical characteristic that smaller than normal person since they were born. As well, found the health problem about the joints of the bone that usually pain. Because these joints haven't big enough for support their activity of the normal environment in a long time, which these factors about their occupation. Because the dwarves who have enough income, quality of life will be improve as well, whether it be living, traveling, working and even the society.

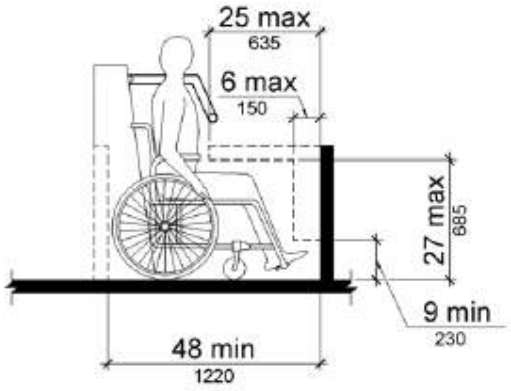
In the point of the design, perhaps the most of product were designed for little people are accessories and a new thing was increased more than adjusting to the environment. In case the little people family or stay alone, they usually adjust the environment by themselves. They have applied to use some ordinary equipment for accommodate in their activities and, the adjusting of all environment for little people that have a few and so expensive. Such as small kitchen and small car, the society should be changed the attitude that toward them, for accept in the other aspect in the future.

In the point of using to the public space of these people, they have a few problems because their eyes still seeing normally and their legs still walking normally. But their problem is a height, such as the height of the bus ladder, the height of counter service, the height of water closet, the height of wash basin and the mirror. Usually when the people with disabilities are suffered by these problems, always has someone tries to help them. Actually, deeply the people with disabilities might not need to help, because they do not want people in the society to thinks about them as a social burden. But look at them like a one member of society, like others.

From this point onward, the following six short essays reported by the undergraduate design students from Assumption (private) University. There are six experiments in the classroom named "Human Factor and Universal Design". Those young designers have opportunity to try their familiar built environments in different way of movements. For instance, there are four groups of volunteer exploring their building in wheelchair and there are two volunteers had to complete the given tasks as a blind.

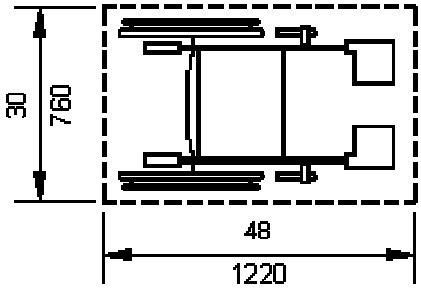
3.1 | Use a toilet in a public building with personal assistant

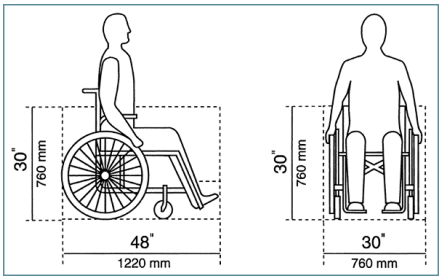
Pieajet L., Jia Dong L., Sarat W., Asanee K., Anusorn K., Natcha N.



A wheelchair is a chair fitted with four wheels. The device comes in variations allowing either manual propulsion by the seated occupant turning the rear wheels by hand, or electric propulsion by motors. There are often handles behind the seat to allow it to be pushed by another person. Wheelchairs are used by people for whom walking is difficult or impossible due to illness, injury, or disability. People who have difficulty sitting and walking often make use of a wheel bench. Wheelchair produces for cripple or patient. Wheelchair seating systems are designed for wheelchair users to redistribute pressure from areas of the body that are at risk of pressure ulcers. For someone in the sitting position, the parts of the body that are the most at risk for tissue breakdown include the ischiatuberosity, coccyx, sacrum and greater trochanters. Wheelchair cushions are also used to provide stability, comfort, and aid posture and absorb shock.

Standard wheelchair





Size wheelchair height 30'' and width48'' is standard of wheelchair. Wheelchair accessible vehicles may also include a ramp to facilitate entry and exit. These may be built-in or portable designs. Most major automotive companies offer rebates for portable ramps and mobility access equipment for new vehicles.

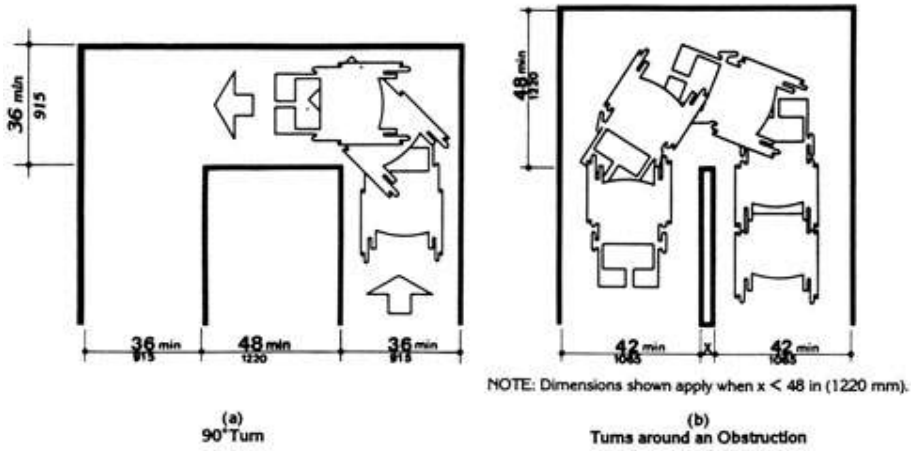
Wheelchair measurement standards

Width: 30"/760 mm.

Height: 30"/760 mm.

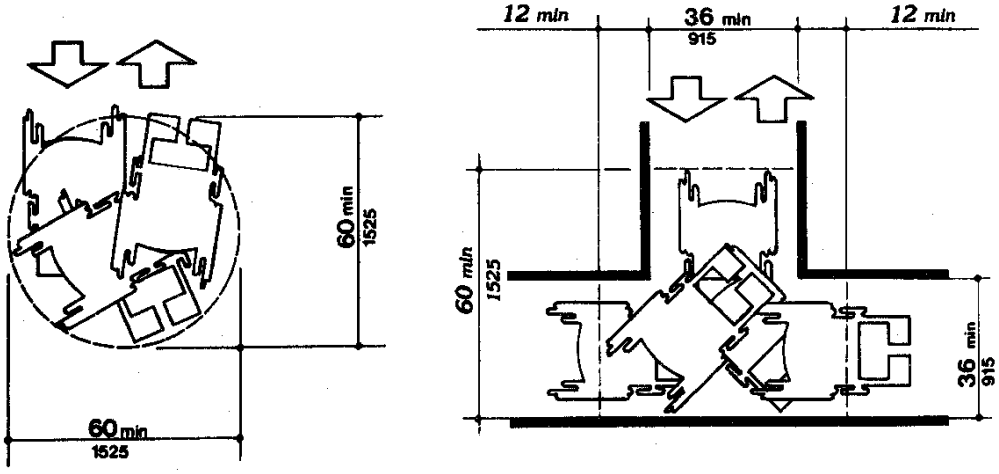
Depth: 48"/1220 mm.

Turns around an obstruction minimum

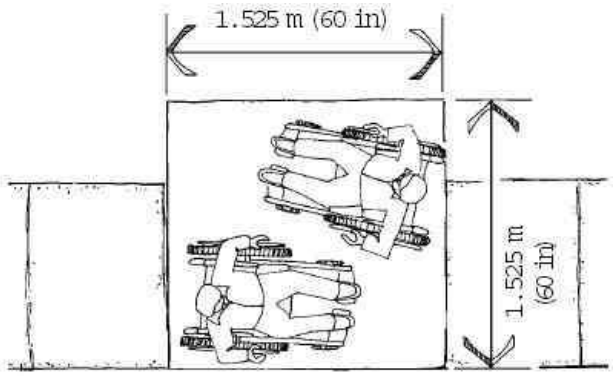


Space in U-turn of Wheel chair are 36" and space in turns around an obstruction are 48"

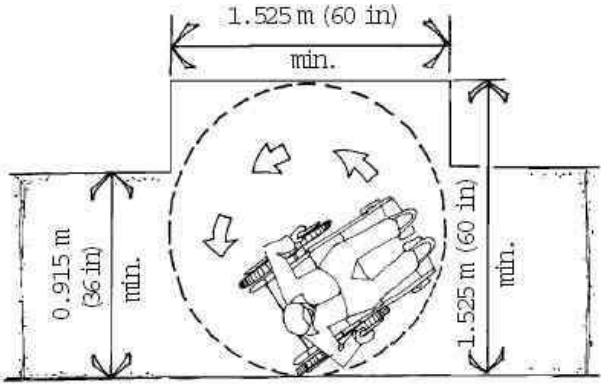
Minimum Space for wheelchair



There should be a clear floor space (withno physical obstructions) in front of the sink to allow a forward approach. This space should be 36 inches by 48 inches. It should be on a route easily accessible by a wheelchair. Rotation is circle 60 inches diameter space and move is t-shaped space for 180 inches turns.

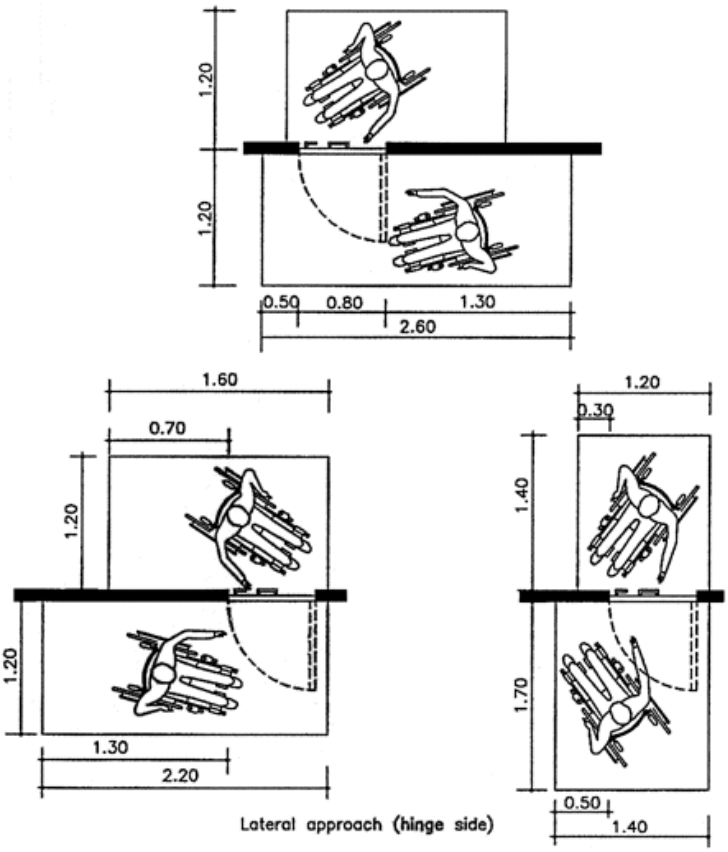


Passing spaces should be included at intervals on narrow sidewalks to allow wheelchair users to pass one another.

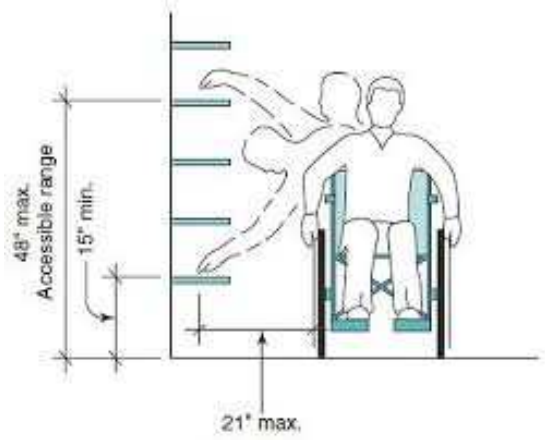


Wheelchair users require 1.525 m x 1.525 m (60 in x 60 in) to maneuver in a complete circle.

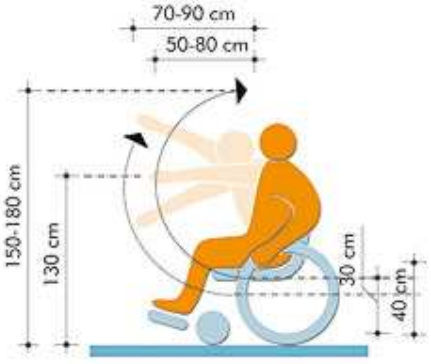
Wheelchair maneuvering space



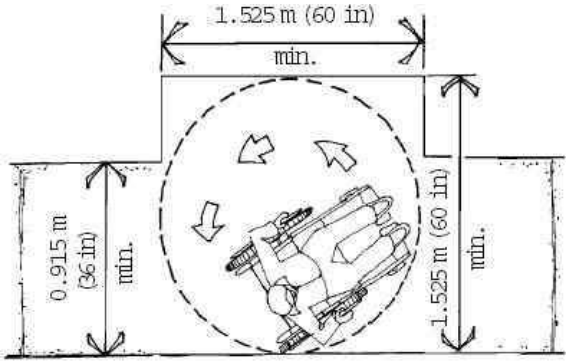
Quality movement of hand while sit on wheelchair



When sit on wheelchair, disabled and patient will bring up thing from side because conveniently than more front. By bring up thing maximum are 48 inches and minimum are 15 inches.



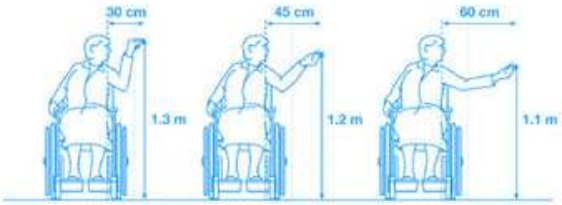
Phase filed hand out front while sit on wheelchair maximum 70-90cm. and minimum 50-80cm.



Space turn around at right of wheelchair move to front, reverse, turn left, turn right and turn around immovable minimum 1.5 m

Phase bring up thing side

Reach in cm	Maximum height in metres
30	1.3
45	1.2
60	1.1

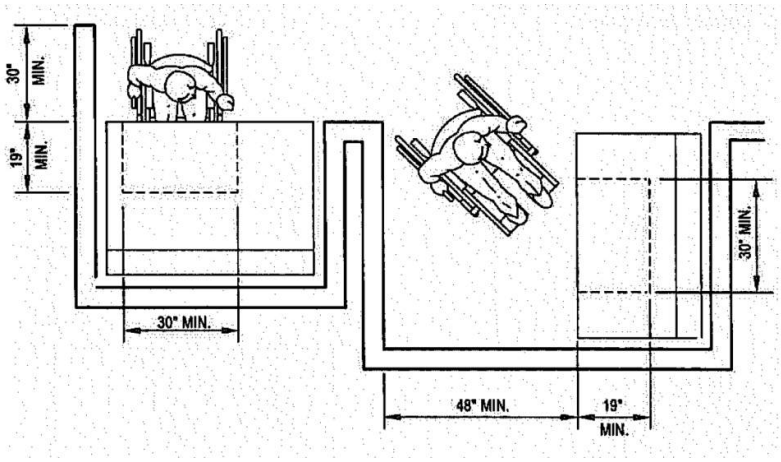


When reach 30 cm maximum heights in bring up thing 1.3 m.

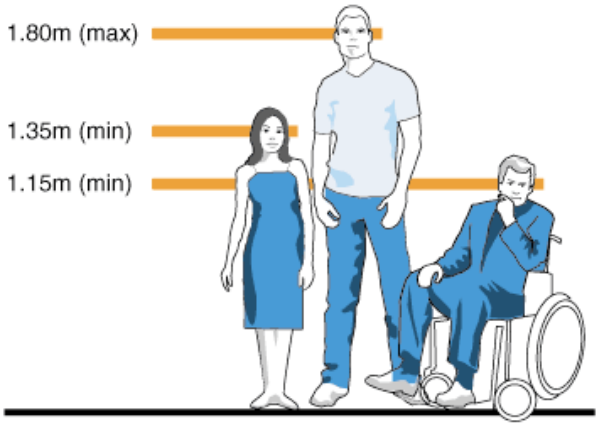
When reach 45 cm maximum heights in bring up thing 1.2 m.

When reach 60 cm maximum heights in bring up thing 1.1 m.

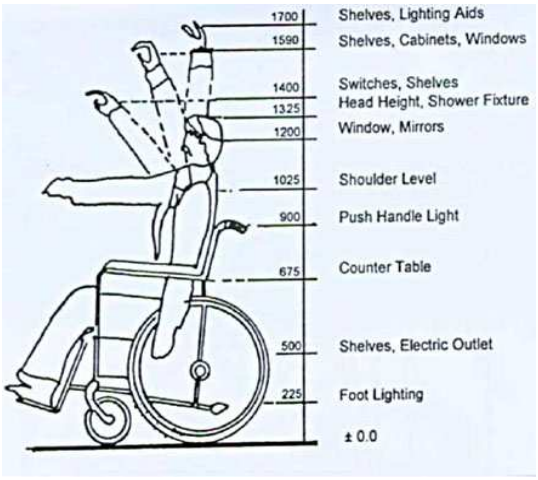
Will see when phase reach bring up thing increase height in bring up will down.



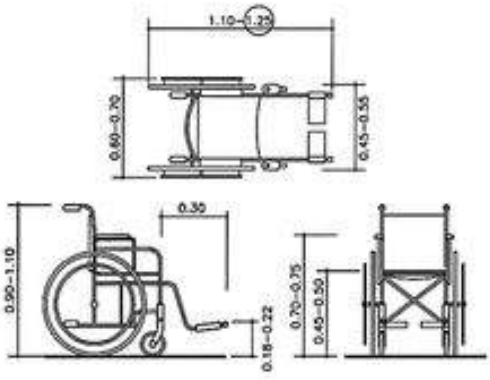
Width of space in working area, the minimum space is 48 inches.



Disabled or patient height minimum size 1.15 m.

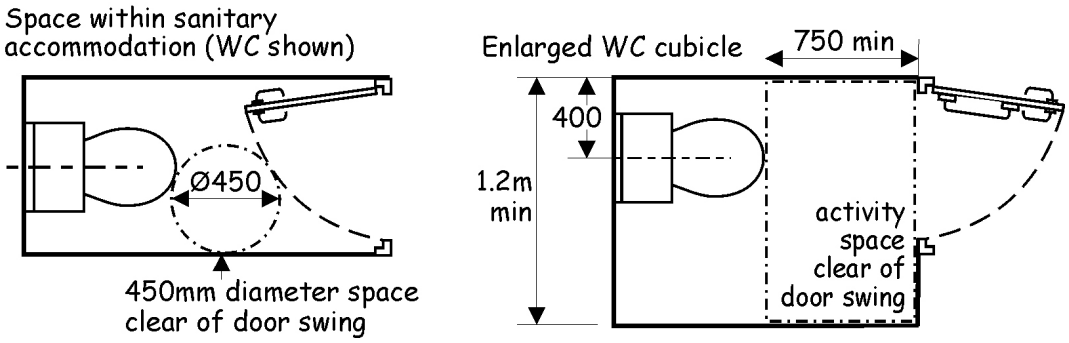


Reach with the arm up high.



Wheelchair dimension

Space left when opens the door.



Space clear of door swing minimum space is 750 mm.

The Project

So our project is "Use a toilet in AR building (Architecture building in Abac) with personal assistant". We start form classroom to toilet.

Firstly, we explain about disable appearance. The height of disable is 170cm. Arm reach is around 80cm. When the disable sit on wheelchair the height from floor to the head is around 130cm.

During the hallway, it takes around 2 to 3 minutes to the toilet. There is no problem when we go to the toilet.

The door function is good, because it is a sliding door. Therefore, if the disable come alone without the assistant then disable can open the door by himself. On the other hand, if it is a swing door, so it is difficult for disable to open the door.

When we arrive at toilet, the space in toilet is too small. Because if the assistant let disable go in first then there is no space for assistant for helping disable to use toilet as you can see on picture.

This is a toilet for disable plan in AR building. The sink is on corner left. The toilet is located on corner right.

We think that sink is a bit higher for disable to use it. The disable have to reach out for use it. If the sink is far from wall a bit further and lower, it will be perfect.

Firstly, we let the disable try to use toilet by him. The disable have enough strength to reach him up from wheelchair to the toilet. But the handrail is place a bit high from the floor. The handrail on the right side of the toilet is far to the disable to reach it. Moreover, wheelchair cannot go to in front of the

toilet because the space between sink and toilet is too small. The assistant **cannot help the disable totally regarding the space is too small.**

If the disable does not have enough strength, the disable cannot use this toilet by himself. So the assistant have to help the disabled. In our project, we have tried the assistant to help the disable in the toilet. The assistant cannot help regarding the space and the assistant does not have enough strength to lift the disable up from the wheelchair.

Feelings as 'disabled'

He feels very comfortable when his assistant help him to go there or anywhere he wants because the assistant is very useful for disable. But the space struggle in the toilet and handrail position is the main problems for him. Space is too small;handrail positions are too high and sink position also.

CASE STUDY 1

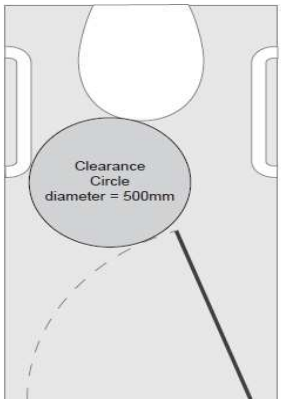
Publicly Accessible Toilets

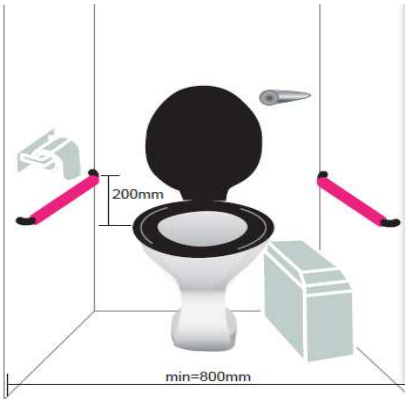
An Inclusive Design Guide

Gail Knight and Jo2Anne Bichard

The age-friendly cubicle would incorporate some elements from the ambulant cubicle. It would be slightly wider than most existing cubicles and it would include handrails on either side of the toilet. The door locks are 'accessible'

(can be opened with ease by a closed fist), the toilet paper dispenser can be accessed by someone with arthritic hands, and the flush is of a lever design (wall inset flush systems can be difficult for people with arthritis to operate). Coat and bag hooks are essential, and, where space allows, shelves are recommended.





Ideally the age-friendly cubicle would become the standard toilet cubicle. This would allow growing numbers of older people to access suitable toilet provision and relieve pressure on the unisex accessible 'disabled' toilet.

CASE STUDY 2

Handicapped-friendly modern bathroom design by Chengduk Kim and Younki Hong, designers from Korea

A higher toilet seat, about 18 inches is much easier for a disabled person to use. Grab handles helps a person to lift himself up. The space between the

toilet and a handle on the wall is very important for comfortable bathroom design. This space is defined by the size of the user. The toilet seat should be not too far or close to the wall with a grab handle.

In my opinion this design is not functional. The toilet itself is placed permanently in one position, so how the space between toilet and handle can be defined by the size of the user? It is definitely not an option for the public toilet as there are different users of different sizes. I would not consider this toilet useful even at home. What is going to happen if someone loses the weight or gain it? Will they have to buy a new toilet?

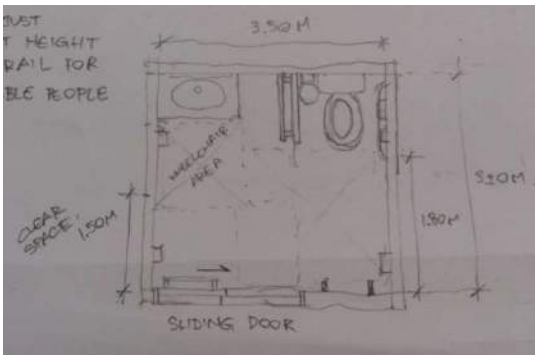
My another concern is how disabled person will remove clothing while sitting on the toilet? If the idea is to slide easily on the toilet seat then when the user should remove clothing?Before? So how the person will sit on the seat with lowered clothing? It will be impossible. It might also be easy to slide on the toilet seat, but how safely come back on the wheelchair? There is no grab rail on the sides. What if someone has back problems? There is no option to rest the back.

I believe that this idea was not well-though out. It is not functional and easy in use toilet. I would say it is very dangerous for its users and I would not recommend it. Only two things are really important when you want to create functional bathroom for a disabled person. Make the bathroom design safe for someone with mobility problems and ensure that using it safe and comfortable.

Design solution

We think that the important problem in AR building disable toilet is space in the toilet. So we come out with a bigger space approximately 3.50x3.20m. There must have a clear space for wheelchair and assistant in the toilet. Therefore, the assistant can help the disable affectively. Such as lift the disable up from wheelchair to the toilet.

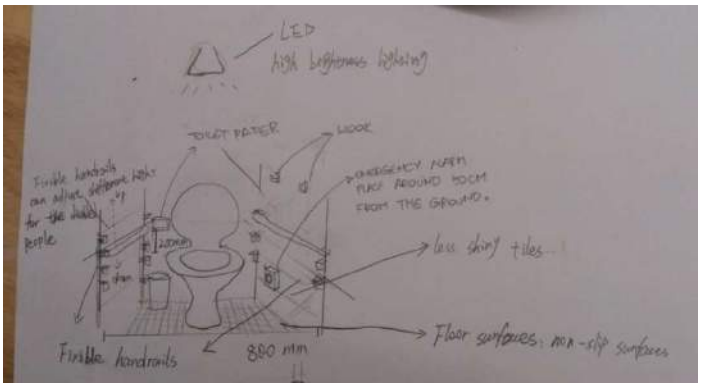
The door widths have to be around 1.00m that is suitable for wheelchair and assistant to go through. The door should be sliding door because it is easy to open for disable and assistant.



Toilet necessity will be around toilet. Therefore, disable can use it comfortably. (toilet paper, coat and bag hooks, trash, etc.)

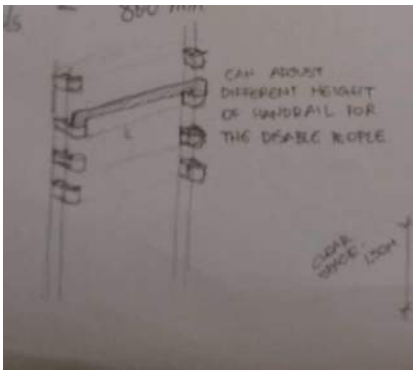
The important thing is emergency buttons. We think that the emergency button should place around the toilet. In the same way, it should place around 50cm above from the ground. Therefore, the disable can push the buttons if they fell down on the ground.

The floor surfaces: non-slip surface.



Handrail solution

Regarding to the different of disable height, we think that the handrail should be adjust into different height that is suitable for disable to use it. By creating hook on handrail and create hole on handrail structure.



Conclusion

For our AR building disable toilet, the issue of providing toilets does not arise – user do not expect to have access to a toilet. We should consider how accessible the toilets are – both in terms of getting to and using the facilities.

If there is sufficient space available, a toilet compartment might be modified to full wheelchair-accessible standards. This may be achieved in a variety of ways, such as moving a toilet from an inaccessible location to an accessible location. You will need technical advice on creating a wheelchair-accessible toilet compartment, as the layout, dimensions and positioning of fittings are all critical.

The following checklist suggests other improvements that can be made to toilets (even without creating full wheelchair access) that will benefit many other disabled people.

Practical suggestions:

1. Fitting grab rails: appropriately positioned grab rails can be of great benefit to customers with limited movement,

2. Balance or grip. Better lighting: improving lighting in toiletswill benefit everyone, particularly those people with visual impairments.

3. Floor surfaces: for safety reasons, could you change shiny or slippery floor surfaces to non-slip surfaces? This will benefit all customers, particularly those with visual or mobility impairments.

4. Avoiding shiny ceramic tiles and floors: these can cause reflection and glare which may be visually confusing – could you replace them with less shiny tiles, perhaps when undertaking a refurbishment or redecoration?

5. Clearer signing to toilets: including pictorial symbols is beneficial to all people, particularly those with visual impairments or learning difficulties.

6. Management: ensure that supplies of toilet tissue and paper towels are regularly replenished and that toilets are not used as storage areas and are kept free of obstructions.

7. Making a alarm: that alarm systems in toilets can help disabled people to get away from embarrassing situations. Ensure alarms are regularly checked. Pull-cord alarms should be capable of being activated from floor level. It is important that staffs are familiar with any alarm systems.

8. Fitting a fixable handrail: make a fixable handrail for different users, some people's arms maybe not able to reach the handrails. could fit a fixable handrail to help customers with mobility impairments up and down the toilet. Having something to grip and provide support makes access much easier and safer.

Introduction of Universal design

Nowadays ,the design of all products considers more about ability to access their product by setting the target group, which is the process of creating products that are useable by people with the widest possible range of abilities, this is about making things accessible to all people including disabilities many countries have their own disability laws.

We can see many in the public building. The symbol for accessibility is used to describe facilities to assist people like wheelchair ramps, braille signage in elevators, pedestrian crossings, walkway contours; etc all there could help disabilities in daily life easier. Because of disabilities has their own right as , so the part of design may give an attention to disabilities the most . There are not only public building that provide access to them but also transportation, housing, street, technology.

The creation of a new device the assists a person in completing a task that would otherwise be impossible is assistive technology. Some examples include new computer software programs, and invention such as assistive listening devices, hearing and traffic lights button. A significant developmental transportation and public transport in particular is the move to low-floor vehicles, access of the passengers cabin is unobstructed from one or more entrees by the presence of steps, enabling easier access for the infirm or people with plush chairs. Low-floor buses may also be designed with special height adjustment controls that permit a stationary buy to temporarily lower itself to ground level, wheelchair access. The creation of priority parking spaces and disabled parking permits has made them a standard feature.

Advantage and Disadvantage in Architecture School (AR) Building

AR building has not been designed for a good universal design from the beginning because good universal design doesn't separate people but make it harmony and design an aesthetic for all.

Advantage

- Has wheelchair lamp in the back of the building.

- Handicap access was separated from normal people access to the back of the building.

Disadvantage

- Before get through the wheelchair lamp it is quite the steeplechase road from car park and has a footpath from the main road.

- That 4 elevators were separate to two elevators for event floor and other two for odd floor that make the confusing for the new people who get there.

For this reason it can waste the time for any people who don't know.

- No vertical circulation for handicap without electricity.

- No fire exit for handicap.

- Has drop-off and elegant stair in front of the building.

- That aesthetic has no function for handicap. May be functionless for normal people too.

- No access for handicap from drop-off into the building.

- Has its own car park under the building.

- No access for handicap from AR car park into the building.

- Circulation inside the building is easy to understand.

- No handicap restroom signage so the cripple has to experimental by themselves if they don't have assistance.

- Handicap restroom has enough space for any activities inside.

- Has a great rooftop.

- Handicap cannot get through there.

- Has heliport on the top of the building.

- No access from heliport into the building for handicap.

3.2 | A Journey in Wheelchair

Phattarawadee N., Monnarat K., Yin Yin., Nisachol S., Atikarn D., Kulap S.

Live a life of disable is it hard to overcome? In our society, every day we have seen many people become disable either by accident or born disable. Thus, for a healthy people it's hard to visualize how they overcome the obstacles in life. As an interior student, it's essential to understand the life style of a customer in order to design a feasible blueprint that satisfied customer's requirements. As our project mainly target on obstacles that we might face while using wheel chair. Therefore, we planned an independent's journey of using wheelchair to experience the life style of using wheel chair. The plan as we schedule started by using wheel chair to purchase beverages in Plaza and return back to AR building without asking any helps. As thus, we need to record that obstacle that we might meet during the journey of using wheelchair and eventually come out with a feasible solution to resolves the obstacles.

Obstacle 1:

The first obstacle we faced was the classroom's swinging-door. The door itself has a repelling force that against the force we applied while sitting on the wheelchair. For normal situation, we can push the door easily is because we applied perpendicular force to the door and we have larger frictional force, thus, the force we applied is bigger than the repelling force so the door is opened. As for the wheel has small frictional force to resist the force repelled by the door. Therefore, the repelling force is larger and the force we applied while sitting on the wheel chair is smaller than we are walking with certain acceleration. So the door will push back the person sitting on the wheelchair. Moreover, a person also faced a problem in order to wheel out the door. Assume she has the force that is large enough to push away the door but in the same time she has to prevent it from shutting again. Thus, she has to use her one hand holding the door and the other hand rolling the side wheel. It's not easy to roll the wheel-chair with one hand. If she doesn't have enough

strength to roll the wheel-chair she still needs to struggle a lot in order to open the door.

Solution:

The problem of the door in each building is mostly swinging door. Therefore it is too difficult to push or pull the door open as it is very heavy. So we come up with some solutions for this problem. First of all, there should be a push button to open the door automatically as it is easy and doesn't require any helps from others. Next we can change the door to sliding door as the users only need less energy to pull the door open or pull back to close the door. Moreover, we change the door weight lighter so the door repelling force won't be large enough to against the pushing force by the users. So the user will not experience the difficulties of opening the door.

Obstacle 2:

The second obstacle was the incline slope that located at the back of the AR building and Plaza. As we all know, an object stays on the incline slope will slowly move downward due to the gravitational force. Especially for round object, it is easier to roll down as the surface area is small and it has less friction than the flat object. Thus, for person who use wheelchair will have to overcome the pulling force by the gravity in order to move downward slowly. As from our experiment, the higher and shorter the incline plane, the harder it is for the person to control the rolling speed of the wheelchair. Moreover, while rolling down that's a potential danger that a person could lean forward. From our experiment, while rolling down the incline slope one of our group member had experienced the danger of falling down from wheelchair as she needs to control the wheel firmly. In the meantime, she needs to keep her body balance not to lean forward. Therefore, it is very difficult for the person to overcome the second obstacles as without any practice the consequences caused by the incline slope will be significant.

Solution:

After analyzing the problem we find out the slope is too steep. According to the rules and regulation of Thailand, every three inches vertical we should

make the ramp with a height of one foot. So 1:12 slope would be recommended for building ramp for disable. So we should build the slope according to the world standard height. As from our experiment, we also found out we have gotten about ten slopes for one round trip which seem very hard for disable to travel to buy the drinks. The slope in our university is too high and too dangerous for the disable. So in order to solve this problem, we come up with the solution that the University could upgrade the slope longer and lower the height according the standard design for ramp. In this way the people using wheelchairs can easily go up and down and danger of falling down will be hugely decreased. Furthermore, after a thoughtful consideration the slope isn't enough for the wheelchair user to use. So we think there should be a path for the disables to use between SM building and IT building as wheelchair users can go directly to the SM building rather than moving longer distance to SR building and then travel back to Center. In addition, the slope for the disables in AR building has many turns. Thus, the wheelchair user has to spend plentiful of time travelling the turns. So we suggest make it straight so that it will be more convenient for them to travel and doesn't wear them out.

Obstacle 3:

The third obstacle was the steps. Steps can be considered as one of the most difficult problem for person who uses wheelchair because based on our research that is impossible for wheelchair users to enter the steps area without human assistance. Going up the steps can be a problem and going down a step too. Based on our experiment, our team member tried to use wheelchair to climb step and she failed. The reasons behind the failure were the height of the steps and the weight of the people. The higher the steps the more difficult it is. Wheelchair users, their lower part body doesn't have strength to help them lift the wheelchair in order to climb up the steps. Even for a healthy people, it's very difficult to lift up the wheelchair while sitting on it. Our team had tried many ways to climb the steps and we found out it is feasible to climb the steps without any helps but it needs practice. Climbing the steps also has potential danger of falling down. Our team tried to climb a step with the help of team members. We tried to measure what danger could happen while climbing up the steps. The wheelchair users itself have to life up

the wheelchair in angle of certain degrees and then rolling upward slowly. She has to hold the wheel tightly preventing it rolling forward. In the meantime, she has to roll the wheel slowly backward. However, the user is having the danger to falling off the wheelchair as her body is inclined to the surface. From the experiment, two of our team members help the user to lift up the steps and it was still very hard. Furthermore, while moving down from the steps, the user still need assists from our team members as the step was fairly high for user. Somehow, it was easier to move comparing climbing the step.

Solution:

The problem for the third obstacle is that the step is the too high and people using wheelchair have to wait for help in order to continue their journey. So when they face the high step the only solution for them is to wait for us. This can be a trouble for them. Hence to tackle this problem, we have figure out that some steps should change to slopes as slopes can save their time while travelling and it is very safe. Another solution for the steps is to lengthen the path of the slop to the step. Thus, the path will be more convenient for the wheelchair user to travel as it is attached to the path. However, there's also a feasible solution. We can decrease the height of the step to certain level that a wheelchair user can climb up themselves. Since some steps height isn't a problem for the wheelchair user after they have practice climbing step.

Obstacle 4:

The fourth obstacle is a potential of danger while cross the road. As our school university doesn't have a special path for the wheelchair users. Wheelchair user has to use the car road so it has potential danger that an accident could happen while crossing the road. For instance, during morning hr around 9am and evening time around 4pm are the peak hour time. Thus, it is very dangerous for the wheelchair user to cross the road as they might need someone to help them in order to cross the road safely. In addition, while passing the junction road in Center and IT building the wheelchair user might need assistance to climb up the steps or moving down the steps.

Solution:

As there is no special road for the disable and it is very dangerous for them. So in order to reduce the possible car accident while they are crossing the road there should be a sidewalk with traffic signal. For example, in developed countries every cross road we can see a sidewalk with a traffic signal button for the people to press. The button is use to help them watch when is safe to cross the road or to remind them when to wait for the signal. In addition, there should be special road or separate road for disable and so they don't need to wait for traffic light and it is very safe.

Obstacle 5:

The last obstacle was the path for the wheelchair users. Not all the paths are suitable for the wheelchair users. For instance, the rough path has had a problem for the user. In order to find out how rough path affect the wheelchair users while they are travelling. We have done an experiment on a group full of grasses and holes. One of our team members tried to roll over the grassy and holey path and she needed more energy to make the wheel turn. It was due to the ground friction. The frictional force on the rough surface is large, thus, the wheelchair users need to apply larger force to against the frictional force. Moreover, as the ground full of small holes the wheelchair user experienced bumpy ride. So the wheelchair user can't roll in a straight line but in a randomly direction. Thus, users need to focus and spend more energy to control the wheelchair. Additionally, while users try to ride on a speed bump, she couldn't roll over. She experiences the force similar to climbing the incline plane. There's a gravitational force keep pulling the wheelchair user backward. The user needs to make several attempts in order to climb over the bump. Eventually, the rough path and the speed bump could make the wheelchair user feel wear out.

Solution:

There are many problems on the path. The road is not smooth, which make the disable hard to use the road. Some path is not made from concrete, it is grassy and when there is rain and the road will become really muddy and could

immobilize the wheel as it will get stuck in the mud. Thus, replace the grassy path into concrete could help the users to mobilize easily. Therefore, it will save their energy while travelling to their destination place and not getting tired. Meanwhile, there are some speed bumps on the road, which is hard for the disable to pass through. So we suggest there should be a special path for the wheelchair user to use rather choosing to cross the speed bump. The road to SR building, there is a manhole which the wheel stuck in that. We can change the drainage grating to be smaller so that wheel won't get stuck in the hole.

In addition, the path for disabled is located separately from the path people normally use. For example, the ramp for disabled is placed at the back of the building while the main entrance is located in the front of the building. This arrangement may be convenient because the ramp is placed nearby the elevator, but the disabled may feel a bit lonely since she cannot take the same path and experience the same feeling of entering the building as her friends. Also, there is no ramp up to SM building (center) which is the shortest way to go Plaza. So, they have to go around further and take more time to get into the building. From our experiment, our team member who used the wheelchair took almost half an hour just to get into Plaza while other members took no more than 10 minutes to get there.

Conclusion:

After thoughtful analyzing, we have given out some solutions to solve these problems. These solutions can be found and attached to the places and upgrade the old ones to make it more convenient for the disable. However, we only tried to use the wheelchair in our school area and we have found out the swinging door problem, the ramp problem, the steps problem, the path problem. All the problems which seem easier for us but as the wheelchair user this could be a headache for them to solve. Currently, if we have to rate if our university is suitable for disable or not, the answer is "NO". Since it is not a universal design that has made a consideration for the disabled persons. However, with the help of human assistance it is possible for them to travel around this university, for example; the slope and the buttons in the elevators

are low enough for wheelchair user to use. But somehow the disable still need help from other people to use the slopes, to get on the steps, to cross, to open the door and also to take some things on the selves. Thus, in future if our school has programs for disables. The school should solve these problems so the disables can easily use the building and travelled around the university. For our team suggestion, a universal design for the school is very necessary to the disables since university is for everyone not only for "us".

Case study 1:

Roll-A-Ramp

Roll-A-Ramp, a product from West Fargo, North Dakota, USA. It can be used as a portable ramp, van ramp, semi-stationary modular ramp or any place where accessibility is needed. It is the most portable and versatile ramp which will be built to the length you need. Thus, rather choosing expensive chair lifts Roll-A-Ramp would be a better choice. For the unique features of Roll-A-Ramp it is light and strong, portable and versatile. In some situation, it will be a time that we have to lift up the disables to help them climb the steps. However, it's impossible to life up heavy weight person. Thus, Roll-A-Ramp as its name it can be roll into a ramp which is suitable for the wheelchair user when they have to climb the steps. The nice feature is it can withstand the weight of 1000lb. Roll-A-Ramp, with its aluminum body, it can use in any weather including raining and snowing as it will not rust and make damage to the wheel of the wheelchair.

Case Study 2:

Pedestrian Controlled Button

A pedestrian crossing or crosswalk is a place designated for pedestrian to cross a road. These are designed to keep pedestrian together where they can be seen by motorists and where they can cross the road most safely. Along these crosswalk, there are Pedestrian controlled buttons for wheelchair users or disables to use and controlled while they are crossing the busy traffic. Signalized pedestrian crossing is clearly separate when each type of traffic

can use the crossing. What appear to be just pedestrian crossings can also be created largely as traffic calming technique as well.

Obstacle 1: Classroom Swinging Door

The door is too heavy for the disable to push/ pull by themselves.

Solution:

Automatic Push Button Door

Sliding Door

Obstacle 2: Incline Slope

Back of AR building

Enter to Plaza

Obstacle 3: The step

The Step is too high to go up. ***The Step is too high to go down too***

Solution:

.

Replace step as slope

Obstacle 4: The Danger of Crossing Road

Need help from Security.

Need to rush across the road.

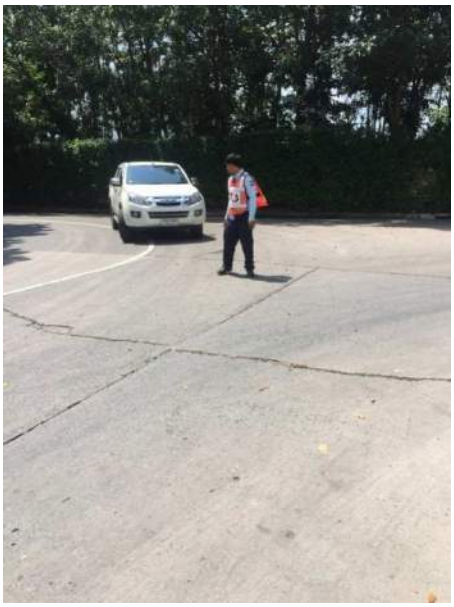
Solution:

Traffic Signal Button / Special Walkway

Obstacle 5:

Rough Road ***Speed Bump***

Solution:



Smoother Road

Case Study 1: Roll-A-Rump

Case Study 2: Pedestrian Controlled Button

3.3 | Journey Journal in wheelchair-bounded

ANN MARIE TEMPLETON, JIRAWAN. N, NGUYEN BAO PHUC, PATHAWEE. P, TANAPOOM. C,

Type 1: a) Independently use a toilet in the same building

The assignment that we have to do is to study and analyze how a disable person uses the disable toilet within the facility. The task involves one of the group members sitting in a real wheelchair and wheel it to the disable toilet and once there, try to use the disable toilet like a real disable person would.

On the way to the toilet, we have encountered many difficulties and obstacles. To begin with, the path for the wheelchair in the classroom is quite narrow which gives the feelings of tight space which makes it uncomfortable. Next obstacle that we found is the door bump or the dust collector which is located at the bottom of the door frame. We found out that it was quite difficult to wheel the wheelchair over it with ease. The first attempt to get across it took more than three times which is not good in terms of maneuver and movement. Also, the doorway is too narrow which makes it hard for the wheelchair to get in and out as well as rotating the wheelchair to the position that would fit the gap therefore we consider that the doorway should be larger and must have easier access.



Once we left the room, the person in the wheelchair proceeded directly to the disable toilet and that's when we encountered another obstacle. The group

member that sit in the wheelchair expressed that the entrance to the disable toilet is too narrow and small which makes it hard to get it and out. Once he's in there, he struggled with the small space provided in the toilet. There is hardly any room to park the wheelchair let alone rotate it or move it to the point where he wanted to go. The lack of space for wheelchair makes moving from the wheelchair to the toilet seat very hard and exhausting. For a first timer trying to move across from the wheelchair to the toilet seat, it took him a lot of effort and a good arm-strength to be able to lift him up and onto the toilet seat. The hand rail that he used to lift himself up is positioned so awkwardly that it was really hard for him to lift himself up.

Moreover, what's harder was moving back from the toilet seat to the wheelchair. To enumerate, the position which the toilet seat is located is in a tiny corner which is angled to the position of the wheelchair, now, it would have been much easier if there was enough room for the wheelchair to be

directly in front of the toilet seat but unfortunately the space is not enough so he had to lift himself up then to the left hand side before landing onto the wheelchair. While doing this task, the person in the wheelchair struggled so hard that he had to use his feet to aid his maneuver from toilet seat to the wheelchair. He thought that it was impossible even for an experience wheelchair user. Also, it's quite difficult to use the sink because the wheelchair is not directly in front of it but instead, he had to use the sink diagonal to the wheelchair which was kind of silly. In conclusion, the disable toilet is too small and the circulation within it is quite tight for a wheelchair user.

The overall feeling for the group member that sits in the wheelchair was that he experienced hardship while in the wheelchair and doing the tasks given. He feels sorry for anyone who has to use the wheelchair because he had experienced it firsthand, he got to feel how the disable feel and how hard and difficult it is to do the normal tasks while being in the wheelchair.

Moreover, by doing this assignment, it makes us pay more attention to the disable people and it taught us that when designing something, one of the most important things is that we have to ensure the easy access and the comfort of the disable users.

Time taken from the classroom to the disable toilet on the same building and same floor.

From the front of the classroom to the door it took us 11:55 seconds (narrow and hard to maneuver)

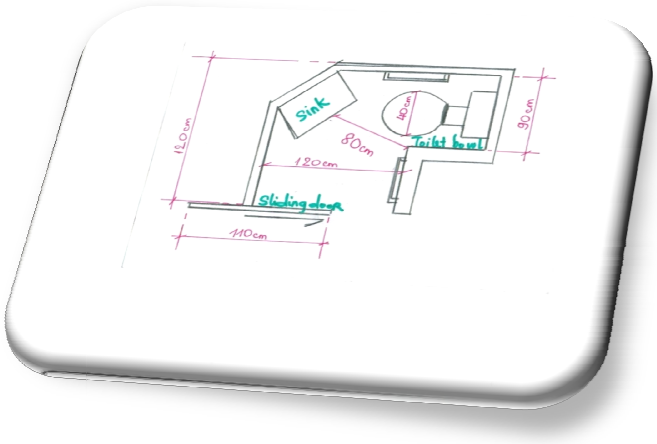
To maneuver across the ramp on the floor took us 31:16 seconds (for normal being this only take 1 seconds but the ramp was not user friendly to the wheelchair

From the door to the toilet took us 1 minute and 11:38 seconds (the hallway was big enough to maneuver the wheelchair)

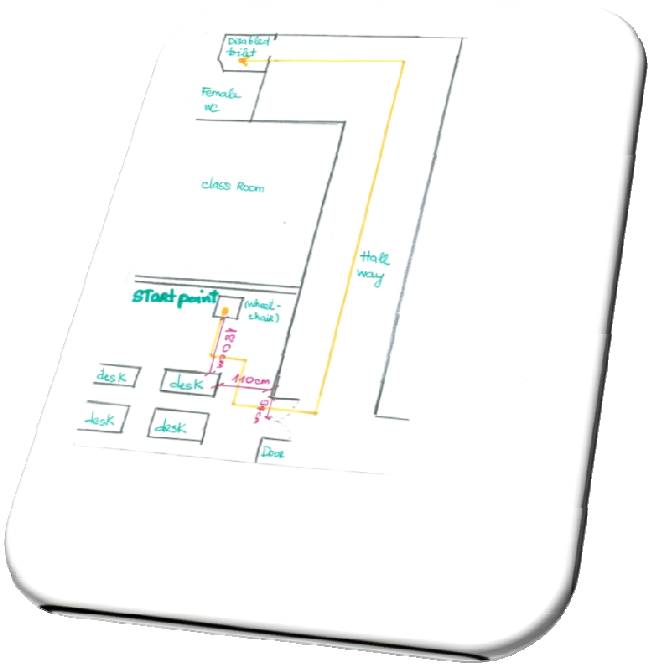
To get inside the toilet it took another 1:38 minutes (the disable toilet door was a tight fit for the wheelchair)

To move around the toilet took us nearly 2minutes and 45 seconds (the space was to narrow and not user friendly as it should be)

It took us longer than it should be. Should be more user friendly to the people using wheelchair.



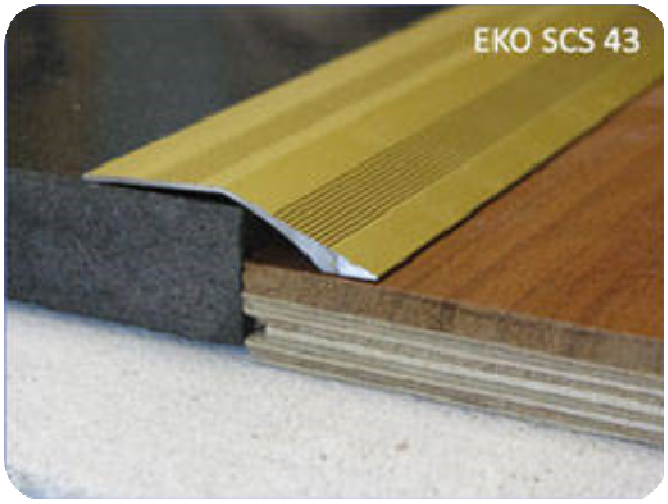
From the classroom to the disable toilet on the same floor

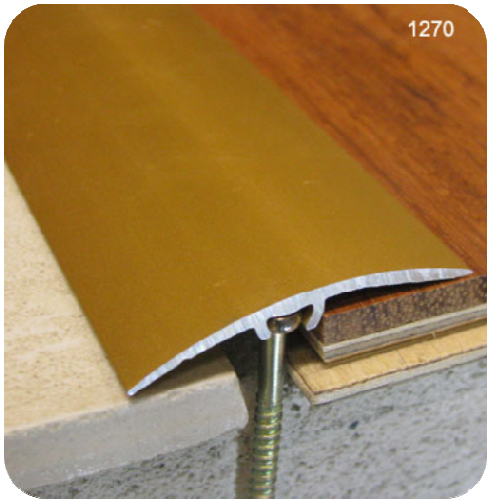


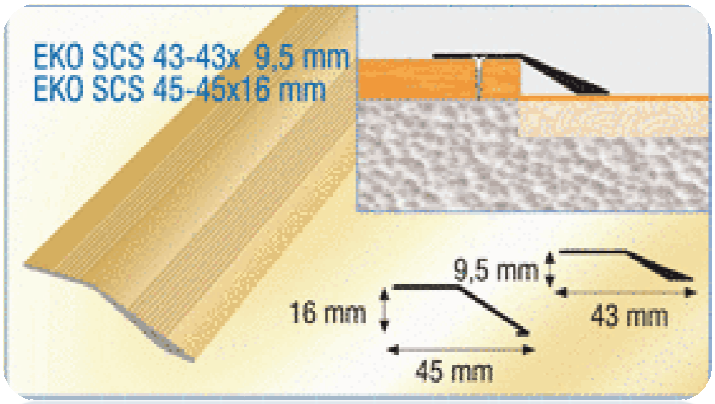
Disable Toilet: Floor Plan & Measurements

Solution for the struggles

Foot Threshold should be more sloped in order for the wheelchair to get across smoothly







Provide a bigger disable toilet equipped with the gadgets that will help aid disable people.

Automatic door should be applied for the inconvenience of handicapped people.

What is Universal Design?

Universal design is very important from the stand point of our group because we might not know when a disable person might want to use the facilities. To have it ready would save all the hassle for the future. We would like to talk about the 7 Principles of universal Design that is so important.

Universal Design is the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people regardless of their age, size, ability or disability. An environment (or any building, product, or service in that environment) should be designed to meet the needs of all people who wish to use it. This is not a special requirement, for the benefit of only a minority of the population. It is a fundamental condition of good design. If an environment is accessible, usable, convenient and a pleasure to use, everyone benefits. By considering the diverse needs and abilities of all throughout the design process, universal

design creates products, services and environments that meet peoples' needs. Simply put, universal design is good design. (Taken from http://universaldesign.ie/What-is-Universal-Design/)

The Seven Principles as described by CUD at NCSU are:

Equitable Use

Principle 1: Equitable Use

The design is useful and marketable to people with diverse abilities.

` Guidelines:

1a. Provide the same means of use for all users: identical whenever possible; equivalent when not.

1b. Avoid segregating or stigmatizing any users.

1c. Provisions for privacy, security, and safety should be equally available to all users.

1d. Make the design appealing to all users.

Flexibility in Use

Principle 2: Flexibility in Use

The design accommodates a wide range of individual preferences and abilities.

Guidelines:

2a. Provide choice in methods of use.

2b. Accommodate right- or left-handed access and use.

2c. Facilitate the user's accuracy and precision.

2d. Provide adaptability to the user's pace.

Simple and Intuitive Use

Principle 3: Simple and Intuitive Use

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

Guidelines:

3a. Eliminate unnecessary complexity.

3b. Be consistent with user expectations and intuition.

3c. Accommodate a wide range of literacy and language skills.

3d. Arrange information consistent with its importance.

3e. Provide effective prompting and feedback during and after task completion.

Perceptible Information

Principle 4: Perceptible Information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Guidelines:

4a. Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.

4b. Provide adequate contrast between essential information and its surroundings.

4c. Maximize "legibility" of essential information.

4d. Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).

4e. Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

Tolerance for Error

Principle 5: Tolerance for Error

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

Guidelines:

5a. Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.

5b. Provide warnings of hazards and errors.

5c. Provide fail safe features.

5d. Discourage unconscious action in tasks that require vigilance.

Low Physical Effort

Principle 6: Low Physical Effort

The design can be used efficiently and comfortably and with a minimum of fatigue.

Guidelines:

6a. Allow user to maintain a neutral body position.

6b. Use reasonable operating forces.

6c. Minimize repetitive actions.

6d. Minimize sustained physical effort.

Size and Space for Approach and Use

Principle 7: Size and Space for Approach and Use

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

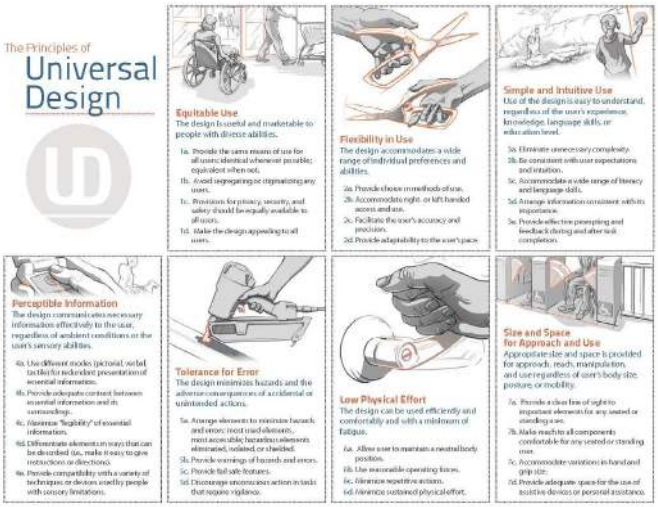
Guidelines:

7a. Provide a clear line of sight to important elements for any seated or standing user.

7b. Make reach to all components comfortable for any seated or standing user.

7c. Accommodate variations in hand and grip size.

7d. Provide adequate space for the use of assistive devices or personal assistance.



http://universaldesign.ie/What-is-Universal-Design/

Case Study 1: Tokyo dome hotel

Introduction

Barrier-free for the people with disabilitiesט [Tokyo dome hotel]

- ***Seating to use wheelchair person's toilets***
- ***Seating to lend wheelchairs***

Regard points

- ***Seating to use wheelchair person's toilets***
- ***Slopes***
- ***Barrier-free***
- **Automatic doors and slide doors**

Not regard points

- ***Pushing doors***
- ***Steps***
- ***Miss-match equipment***

Encountered Problems

1. *Slopes*

2. Steps

3. Grass & not flat road

4. Narrow road

5. Transfers

6. Reaching objects

7. Comfortable seating

Solutions:

(Toilet)

Widen Door

Shower Stall

Ramps

Platform Lifts

Independent transfers may require

Grab bars

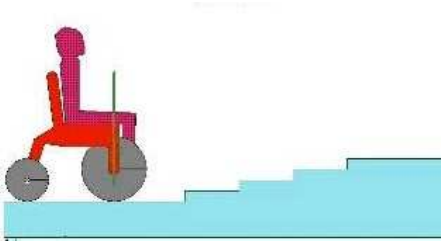
Transfer board

(General)

Slopes

Rear Tire traction Motor, Using a full electric motorized wheelchair, Battery with high % of discharge Rear tire Steering Motor.

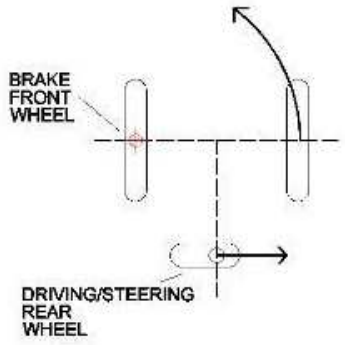
Steps



Using bigger wheel on the front of wheelchair

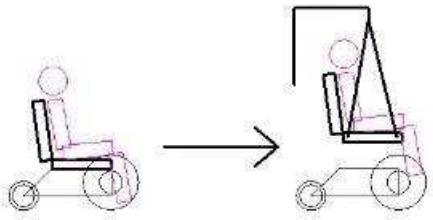
Narrow road

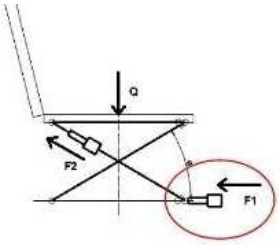
A wheelchair is a cumbersome vehicle that hardly turn in daily life routes. We decide to improve a wheelchair able to turn on the spot with reduced dimensions; using a single rear steering & driving wheel and electronic control of the front brake for a better steering when the wheelchair is stopped.

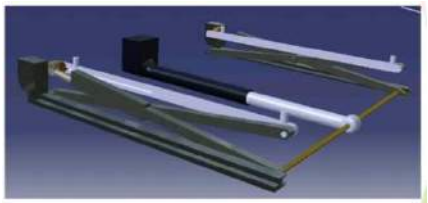


Transfers

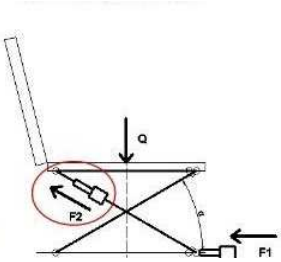
A transfer from wheelchair to toilet is a very serious problem. So, decide to use a removable seat, compatible with actual lifts in disabled toilets, avoiding to lift the person and lifting the whole seat; this would be a comfortably way to transfers. The seat presents a slot that allows the disable to use the toilet.







Comfortable seating



In order to distribute the weight of the back on the seat, used an electronically controlled actuator on one arm of the scissor lift, in this way the seat can tilt allowing a comfortable position.

Case Study 2: HONGKONG INTERNATIONAL AIRPORT

Automatic Door Solutions for Disable Toilet

With the increase awareness of Barrier Free Access, fully automated access solutions are introduced to disable toilets.

The traditional disable toilets are equipped with manual swing doors. The door is either opening outward or inward. Opening outward is more common since the swing of door shall be clear from wheelchairs maneuvering inside toilet. However out swing doors may block the corridor or pose danger to the pedestrian passing by.

Automatic sliding door is the best solution for the application. However, it has to be capable of manually open upon power failure with minimum effort. The traditional automatic sliding door driven by motor, gear and belt posing difficulties for disable person to open manually upon power failure. The opening force to slide the door open manually normally over 20N and is not suitable to use in disable toilet application.

THE SOLUTION:

CS80 MAGNEO with disable toilet control

With its magnetic technology, the CS 80 MAGNEO operates without motor, gear and belt. Upon a power failure, the CS 80 MAGNEO runs as a manual sliding door to fully comply the requirement of Barrier Free Access. On an standard application, the force to slide the door open is less than 10N. The CS 80 MAGNEO integrated disable toilet control system provides:

External button panel with OPEN button and occupancy indicator

The user may press the OPEN button to open the door when the indicator illuminates VACANT. The indictor illuminates OCCUPPIED when the toilet is locked inside.

Internal button panel with OPEN/LOCK button and occupancy indicator

CS 80 MAGNEO sliding door

Automatic sliding door with easy open manual sliding upon power failure.

Safety sensor for detecting approach of the door when operation

Idle detect function with motion detector

Group solution

Our group design solution aim to help and make the life of those who are disabled much easier and to ensure that their everyday task would be completed with ease.

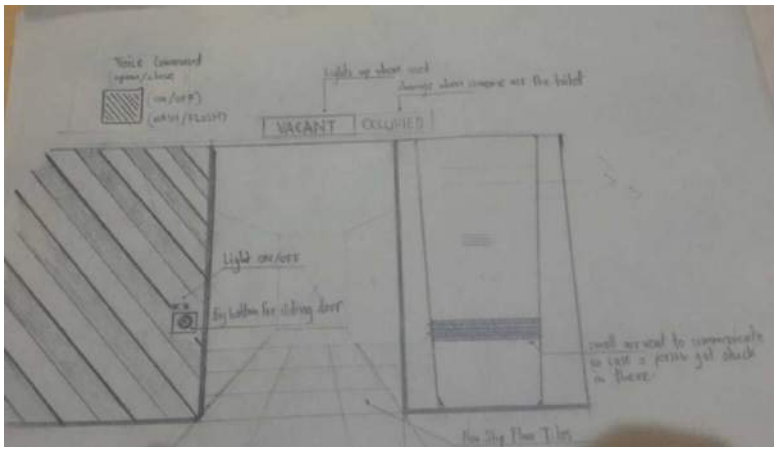
To begin with, the entrance of the disabled toilet will have two choices of entering. First thing first is the big red button which is clearly visible for everybody with good eyesight; however, if a blind man were to use the toilet, he wouldn't be able to find the button. Therefore, we have added another feature which will be the main command of toilet. The feature that we added is the Voice Command feature. People who come can open and close the toilet door by simple sound out the words. For example, "open" the door opens, "close" the door closes. This feature would be very useful for everybody all around, whether a blind person or an amputee.

Another feature is the non-slip floor tiles that we will use inside the toilet. By applying the non-slip floor tiles, we can minimize the risk of the users slipping inside the toilet hence stopping the accidents that could have the potential to be fatal. Moreover, we have added a function to indicate that someone is using the toilet inside, that function is the lighted words atop of the entrance door. When a person is using the toilet, it will show occupied with red colored neon and if it is free, it will display a green vacant sign on top.

In case of emergency, we have added a very small air vent holes in front of the door just in case the power goes off and the person stuck inside wants to communicate with the people outside in order to call for help. This function would become very handy in real life situation or places where electricity occasionally goes out. This would help the disabled people feel better if they do get stuck inside because at least they can still call for help and communicate with the people outside of the toilet. All of these functions and features are added to ensure the safety and the wellbeing of the user. We also make it as easy as possible for disabled people to access the toilet.

In conclusion, we do not want disabled people to feel like they don't fit in the society so we come up with the design to help them feel normal and at the same time, feel comfortable while being normal too.

Lastly, the experience learned for this Accessibility Simulation from our group are never take things for granted and always remember to be a designer to design and cater for everyone needs. We as a group believed that by applying Universal Design in every design is so important and practical. The biggest lesson that we learned is to have patient and love for the disable because they



are also struggling to adapt in this place too. Design that is not as friendly to them to fully accessible. Before we start to design, we should always put priority on Universal Design no matter where we are.

We should emphasize Universal Design to the public and educate them so that they will understand why certain design is design in certain way. The public need know that some of the designs in certain area are design not to give a negative feeling the public. When public understand more about Universal Design they will learn to accept it. When they accept a certain design, this will make the wheelchair people more free with their moment.

Today, we as a group know how important to apply Universal Design in our design. It really changes the way we think and design. We now understand how the disable feel after we ourselves had to go through the wheelchair experiment. It's an experiment that we will never forget.

3.4 | Report of the wheelchair experiment

Noodthida S., Patcharanat K., Nathinee S., Rinricha H., Kulrapee S., Jadsada w.

We have been assuming to be a wheelchair user. Experiment from our classroom to a toilet of CL building. Our group started the experiment at our classroom, where is at the 5th floor of the AR building. First, opening the door was not so easy; the experimenter pulled the door and it could not go pass the wheelchair because of limited of the arm reach. At the same time there is a doorsill between rooms that wheelchairs cannot go through by moving forward so she had to turn around the wheelchair.

> ***Problems entrance and exit the door***
>
> ***The door is hard to push and different level high of the floor. The wheelchair user cannot do it themselves.***
>
> ***Solution***
>
> ***Door should be a sliding door and different level high of the floor not more than 20 mm with a slope ratio of 1: 2. The entrance area should be no doorsill.***

Then, we were going to the elevator. AR building's elevator does not have button for wheelchair users, which is placed lower than the normal ones. And another problem was the experimenter had to get out of the elevator as quick as she could before the elevator's door closed.

> ***Problems using elevator***
>
> ***Elevator buttons are too high, cannot press and leave before the lift is closed.***
>
> ***Solution***
>
> ***The lowest button should have height from the elevator's floor not less than 900 mm. The highest buttons located high from elevator's floor no more than 1200 mm and space from the corner of the elevator is not less than 400 mm. In case, the elevator room has width and long less than 1500 mm. And door has censer to prevent the elevator doors clamping passengers.***

Now going outside by the back door where there are slopes. Opening the door now she tired to push out but the door was too heavy. If there is nobody to help the solution is to lock the wheels to make the wheelchair stay still so it will not slide back. Still, it is hard for the wheelchair user. Going down the slopes had no struggle with it. But the way to the walk way is a rough surface. The experiment had to put a lot of effort.

The surface of the ground problem

There is some wet mud and rugged so they make wheels slipping and could not move.

Solution

Surface of the walkways, ramps, stairs and doors must be secure and must have different surfaces.

At the end of the rough surface road she had to go up to footpath, either way going up by moving forward and backward would not work so she needed to get someone hand to help her. Next, our group was heading to the CL building. At the zebra crossing where there are a lot of cars and people crossing the road. And there is no slope for wheelchair. So we decided to go around corner of the building to the slope for wheelchair, which is far away from the zebra crossing. Crossing the road was so dangerous, because it is curve road. We needed security guards to stop the car then the experimenter could cross.

Going along the way to CL building on the East side where there normally has a lot of traffic. We met a washboard road, the wheelchair barely get pass. The group before our group tried moving forward, they could get through but seemed so hard their chair got freewheel. As we saw so we tried to go backward it was easier. After pass the washboard road before get into the building there were some problems, which is drain with sieve and another footpath. The front wheel stuck in the sieve. And the footpath's problem is same as we met before. Then, we were moving to the slope up to the building. We assume that the slope is not built for wheelchair user because that place for brings in goods and that slope is built for the trolley.

Reference: to the slope for wheelchair

-***Slope should have a minimum width of 0.9 meters.***

-If the Slope is the length of all combinations ranging from 6 meters or more must have a minimum width of 1.5 meters.

-If the floor inside the building, outside the building or inside the building with a level less than 20 mm should slope to connect not stumble.

The slope there has narrower than 0.9 meters also too steep. That makes it impossible for a wheelchair user to go up. Then we were going into the CL building. We met a few more doors, slopes and stairs, same problem.

Critical for this experiment is when we arrived at the toilet in front of the CL building. There are many steps of stair. It is impossible for the wheelchair user to go up. Hence three people had to held up the wheelchair to the stair and down to the toilet.

The toilet was so narrow it is just fit the wheelchair so the wheelchair could not turn around. And the toilet is so small that wheelchair could not get in, therefore the experimenter had to go in without the wheelchair.

Bathrooms problems ***No handrails and narrow majority wheelchair inaccessible*** ***Solution*** ***Space in the bathroom for wheelchair can be turn and should have a diameter is not less than 1500 mm and a suitable door is a sliding door.***
Stairs problems ***Wheelchair could not get up the stairs. Need help from others*** ***Solution*** ***Should limit the differences in the level or reduced to a minimum in order to facilitate the travel of disabled. Stairs in the building should have a height of stair riser not less than 120 mm, but is not more than 180 mm.***

What a bathroom/toilet needs

-Enough space for wheelchair to turn around. In the toilet includes a bath, sink, and toilet. It has to be the right size and use comfortably. There should be a minimum size at least 1,650 x 2,750 mm.

-Interior should not have any obstacle

Space inside the toilet is for wheelchair can spin around should have minimum diameter not less than 1,500 mm

-The bathroom/toilet floor should have the same level as outside. If not there should have a ramp.

After we could manage to go to the toilet at CL building now we have to go back to our classroom. We used the same way where we come until to the place where we cross the road. This time we did not go to the place where they have the zebra crossing but we went through the parking building, there is a lot of watercress that makes the front wheels stuck. After that come to the rough surface area before entrance the AR buildings. It was raining a little bit before we do the experiment, which makes some area become muddy and the same problem, the wheel stuck. After passing the muddy area we came to the

slope where we use when we exited the AR building. The first time (the way down) had nothing struggle. But it is different when going up because the slope is too steep, the ratio is not 1:2 that make the wheelchair user put a lot of effort to push the wheelchair.

Problems of The ramp

The ramp is too steep for wheelchair users so they overstrain to use it.

Solution

There should be an empty space in front of the ramp. The length (measured from the front) is not less than 1,500 mm and with a slope gradient should not exceed than 1: 12 and has each long range not more than 6,000 mm.

Next go to AR elevator and go to our classroom.

Total time: 45 minutes

In conclusion, this experiment shows us how the wheelchair users do in their daily life. What is their common struggle. and how they need universal design for their comfortable. In every building should have put in the universal design for all disables because how they use their life is way harder than normal people.

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3.5 | A Journey as a Blind

SanjanaAgrawal, Chuan-Jung Chang, PannhaOung SiriwongSirisumphan, Allison Perry Canters, Wen Jin

Introduction

Universal Design involves designing products and spaces so that they can be used by the widest range of people possible. Universal Design evolved from Accessible Design, a design process that addresses the needs of people with disabilities. Universal Design goes further by recognizing that there is a wide spectrum of human abilities. Everyone, even the most able-bodied person, passes through childhood, periods of temporary illness, injury and old age. By designing for this human diversity, we can create things that will be easier for all people **to use. Creating a barrier free society for persons who are blind and partially sighted is a mission of our task. We want to create an environment that is safe and friendly for all people in this university. We want to learn how to think, design, and take responsibility of those who are disabled with blindness. Thus to understand the real life situation of the people dealing with this disability, we perform a task, which seems very simple and easy, but in practicality is too hard. We take a journey from one building to another, to use the washroom, with the help of a personal assistant to the blind.**

Blindness and Disability

Blindness is the inability to see anything, even light. Blindness means that you cannot see at all and are in total darkness. Such a life would be really hard to lead and live. Blind people are captured in the prison of their sight. There is no room for any light or hope of being able to see any other color, except for the color of darkness which is black, empty or hollow.

Blindness is a sort of disability that many people around the world are dealing and fighting with every day. Disabilities, like blindness, bind a person from doing physical work. It restricts a soul, physically, emotionally and mentally. Disabilities bring with them, apart from all the obstacles, a feeling for inferiority and insecurity. But that is the picture that our mind makes up, and

sometimes not the image of what is actually true. Even though disabled people feel morally lower than normal people, they are unique in their own ways. Our society is made up of different kinds of people, including both normal and not-so- normal people. All our differences, if taken in the right mind and the right spirit, are beautiful and unique in their own ways.

Context of the Universal design

We have to include everyone and take everyone into consideration when we design for people. And people differ from each other in a million ways. Thus, emerges the soulful concept of UNIVERSAL DESIGN- design for all or ideas that bring the people together and make them feel equal, through the method of designing. The theory behind this concept also demands to bring as many people into considerations as we possibly can, as designers.

Task Information

On the Morning of the 30th March, 2015, we undertook a task in relation to universal design. We were asked to perform a task that was like a simulation of what it feels like to actually be a blind person, only for a few hours of the day. We had to step in their shoes and see for ourselves how a blind person, with the aid of an assistant, manages through his days remarkably.

Our group of 6 people got the task of carrying out a journey of a blind person from the classroom, 0504, to using a toilet in a different building altogether which was the CI Building, in the main campus center of the University. The task was supposed to be carried out with the help and guidance of an assistant who would continuously guide the blind person through the way till they reach their final destination. The blind man also had to use a washroom to freshen up for real.

The equipment that was provided to us was a sleeping mask. It was to be worn by the student portraying as the bind man, to cover his eyes, and to not remove it until the task was fully completed, and we had reached the classroom, which was out end point for the assignment. Along with the eye mask, a student, portraying as the assistant to the blind man was provided who had to specifically say terms that would have made it easy for the blind to follow. She also had to keep her hands at an angle of 90 degrees at the elbow so the blind person could hold it for support and way through the crowd of the university.

The whole process took our group about 45 minutes in all to complete. In 45 minutes, we completed activities such as walking out of the architecture building and going towards the main building or the center; we made our way through people; jotted down thorough notes at every step and made points for all minor details; took pictures and videos of all the activities of the blind disabled man and his assistant; reaching our destination; blind person using the toilet all alone, by himself; and walking our way back to the point where we started off from. We started our journey at 10:50 AM, and finished it by 11:35 AM. At 11:10, we had reached the Toilet at CL. It took us 20 minutes to reach the building which would normally have taken only 5 to 7 minutes. In the toilet, it took us 10 minutes approximately to complete the task over there. While coming back, the way had become a bit familiar and it took us only 15- 18 minutes. By 11:35, we were back on our starting destination.

Physical Obstacles

There were many physical obstacles as well as emotional outflows of feelings by all the participants. So much so that we actually realized what the feeling of being blind is like, and how the families of those people corporate in such hard times of that individual who cannot even see the things around him.

The first and foremost physical obstacle, from a point of view of a blind man, was not having a ramp beside the stairway to the entrance of the building. This was very tough for the assistant to convey to the blind person how and when to take the next step. There was always a fear of falling down or not being able

to walk the whole way with the mask on. A ramp has been made on the back side of the building, but the doors are always locked. A blind person would have a hard time to wait around for the guards to open the door especially for him every day. Plus this kind of a universal design stigmatizes a blind man when he is not able to use the same things as the normal people or just like his friends. When everyone would be using the main entrance to come and leave, a blind man would have to use the back door which has a ramp so that he could move about. The 1st principle of universal design is not being followed here at all. This brings a sense of complex and inferiority to the blind man.




The second physical obstacle that we faced was not having a walkway between the main building and the rest of the buildings. The main road, which is filled with all sorts of vehicles all the times, divides the main center of the university from all the other faculty buildings. This is a really big problem since it is very hard for the assistant to coordinate with the blind person in the

presence of all the traffic noise and high speeds of cars and trams. The distance of the road is also big and it takes about good 2 minutes to cross it for the blind man.

The third obstacle is the lack of a ramp in the main building in any of the places. There are more than 4 different flights of staircases a blind person has to cross in order to get to the toilet in the Cathedral of Learning Building, from the architecture building. It was too irritating and irrational to not even have a single ramp on this route. Each fight had more than 7 steps that the blind man had to climb while holding the assistant's elbow.

The fourth obstacle that we faced was the surface and texture of the floor in front of the CL building. The texture is uneven and very trippy. It is very dangerous, even for a normal person. Even normal people, sometimes while in a hurry, trip over the extruded texture of the ground and fall, scratching the knees and hands. And the surface is such that it cannot even be conveyed to the blind man as to how to control their steps. The fifth obstacle was that there is no division of walkway into two parts. People going in the opposite direction also have to use the same walkway as the people going in a different direction. This becomes a trouble for the blind since he knows that people would be rushing in the opposite direction as his and they would just come all over upon him and he would just have to fight it.

The sixth and the last obstacle or trouble hat we had to bear during this experiment was not having a Handicap Washroom in the CL building. There are many places around the university where there are only the washrooms for normal people. This obstacle had to be faced alone by the blind person since nobody, not even the female assistant, could accompany the blind man in to cubicle. He was on his own and he had to manage in the normal cubical without having grab bars or a larger space to move about.

All these physicals obstacles made it really difficult to do such a simple task. It would have normally taken a normal person only 10 minutes to finish the entire task. But a blind man's journey consisted of so many obstacle, ups & downs, and physical tolerances to complete this mission successfully. All these obstacles show a lack of intuitive design towards the disabled people. The university does not provide universal designs on many aspects and it is not very easy to move around the place without meeting all these troubles for a disabled, or more specifically, a blind person. Our experience was average over all. It was something we had not experienced before. And on some level were relieved that it is just a task that will get over soon, and we would be able to see again in just an hour or so.



Events as they took place on the 30th of March, 2015

As the task begun, we started jotting down quick notes as to how all the participants, especially the students playing the blind man and the assistant to the blind man, were feeling and what thoughts were rushing through their minds at that very moment.

First of all, we started from the classroom at AR0504, and went ahead in the lift. There was a problem for the blind man to press the lift button to call it, but the assistant then guided the blind man and pressed it for him. At this point, Pannha, the blind man, said he felt "weird and strange" waiting in front of something he cannot even see. Then the assistant guided Pannha towards the lift and we reached the ground floor.

The blind man, Pannha also said that he has to keep remembering the exact steps that he walked, in order to walk his way through, even though he as an assistant to guide him. Next we approached the main entrance of the building towards our right. Pannha complained that the assistant walked too fast and he felt lost and had the fear of letting go of the assistant's elbow.

When we reached at the edge of the door, the assistant counted the number of steps that were to be taken by both the blind person and the assistant together. This flight of stairs had 11 steps. The assistant carefully guided Pannha towards the ground, by keeping her elbow at 90 Degrees. The steps

were normal sized without much difficulty in walking. After climbing down the steps, we had to make a right towards the walkway to join the crown coming back and forth from the main building.





The surface of the ground was too uncomfortable to walk on. The blind person had difficulty in walking as he was not sure of what the ground was like, and had the fear of falling down. Pannha said –"I'm feeling so scared of getting on the main walkway, I feel like everyone would be staring at me."

While we walked our way through the path, Pannha said that he was feeling a little insecure- "I felt like people were talking too fast, and maybe they would it me or I would it something on the way." This was a major trouble for blind people: the fear of insecurity. From this task we even realized a point of view of blind people that they even feel guilty about their disability. Pannha even said that he felt like people would have to wait behind him since he was walking slower than the rest of the crowd.

Meanwhile the assistant also felt nervous since she has to adjust to the blind man's pace of walking and how he deals with his disability. The assistant performed her job during the task very well by vividly describing each scenario to Pannha about where and how we would be approaching. After an 8 minute walk, we reached the intersection of the main road. There was a lot of traffic on the road which caused a lot of worry for Pannha, the portraying blind student. He genuinely got scared and asked the assistant to be careful. After about a few minutes of wait, we crossed the road carefully, and reached the center of the building. There were steps again. The assistant guided the blind

man and said there were 8 to 9 steps to climb to the main center of SM building, and the 8 steps again to climb down and walk to the CL building.

One obstacle was in the surface of the way to the washroom of the CL building. It was too crooked and trippy. We walked with a bit difficulty and after about 7 minutes we reached the washroom. Pannha, along with the assistant had to climb more steps. This time it was only 5. When we reached the washroom, we had to face a dilemma- the dilemma of gender. The blind man was a male and his assistant was a female, so she could not go further with him inside the washroom. The blind man, without a stick, had to manage his way into the washroom all alone.

Even though the assistant was giving him directions as to how to move about, Pannha banged into the dustbin. This is an example of an obstacle that ABAC does not have a unisex washroom. Therefore, to solve this problem, we asked permission of everyone inside if we could let the assistant assist the blind man inside, upon confirmation, Siriwong, the assistant went ahead inside the men's toilet and left Pannha into the cubicle. Siriwong was very embarrassed to go inside but she had to. It was a "Horrible feeling" according to her.

After a few minutes, Pannha comes out and the assistant guides him toward the wash basin and Pannha washed his hands and tried them with a dyer. He managed his own self in the cubicle with the eye mask on. It was completely dark for him and he got the sensation of an actual blind person by nature.

It took us the same amount of time, approximately, to reach our end destination. There were the same obstacles that we felt on our way back. There is amount of obstacles, the roughness of the surface, the traffic on the road and the number of flights of stairs. Pannha and Siriwong were too worried about not being able to complete the task since it had started to get very exhausting for the both of them.

Feelings and thoughts of participants during the task

The participant's explored deep down what someone who is facing every day of their life in reality. We recorded some on the spot moments of the main participants.

First of all, Pannha said that "when I first put on the mask, its completely black, feels weird and it is so hard to resist from taking it off". But he also mentioned that

> ***"I feel confident knowing that I have an assistant by my side."***

Next, when we reached the lift to go to the first floor, Pannha said that he was guided by Siriwong to the switch and pressed the going down button.

> ***"I was not confident that I had pressed the wrong one. We can never be sure of where we are heading to."***

After reaching the lobby, Pannha said that he was feeling uneasy and awkward. The blind student said that

> ***"I can hear noises but I have no vision. And I am trying my best to feel safe in in the sounds of people".***

He also mentions that he felt bad and guilty for his assistant because she has to go around with him all the time. Upon this thought of Panna, Siriwong commented that she felt tied to Pannha. She even said that it is so tiring to keep reminding Pannha of every step he take and it is too difficult to continuously Keep her arm at 90 degrees of an angle for convenience for the blind man.

As we approached the open air, and climbed down the stairs, Pannha and the assistant both carefully climbed shown *"trying not to fall".*

Siriwong felt the task is very difficult and involves a lot of hard work from an actual assistant of a blind person. It is so, she explained, because one person, who is disabled by his sight, is depended upon the assistant completely for his mobility.

"It is a very important and responsible task and requires a lot of efforts on my part".

On the main walkway, Pannha said that

"I feel like it's a long, long way till we reach our destination. I

usually cross this area within 5 minutes, but today it is taking a much longer time, and all I can do is be patient about the whole situation. I am just waiting to reach the place as soon as I possibly can. Plus apart from the temporary blindness, I don't have an idea of how far the

place is and how much longer it would take, which is even more frustrating and annoying."

As we neared the main road, both the main participants got tensed since they could hear high speed noises of vehicles, they only "hoped no one would hit them." Pannha also thought that there is only 1 person to guide him across and maybe that is not so safe. The rough road texture also caused the blind man to fumble on it.

As we entered the center of SM building, everyone was staring at Pannha and our group. Pannha also bumped into a sign board, and hit his head slightly. The blind man felt angered by the number of steps this campus had, with no or only a few handful number of ramps for the disabled. There were lots of turns and obstacles in the way. There were a total of 10 different flights of stairs on our entire journey.

Solutions: Sight Assist Glasses and Shoes

The solution to this problem that we have found is very easy to understand and is perceptible to the user's mind. It follows the principle of being intuitive and simple to use from the 7 main principles of Universal design, which includes:

Equitable use

Flexibility in use

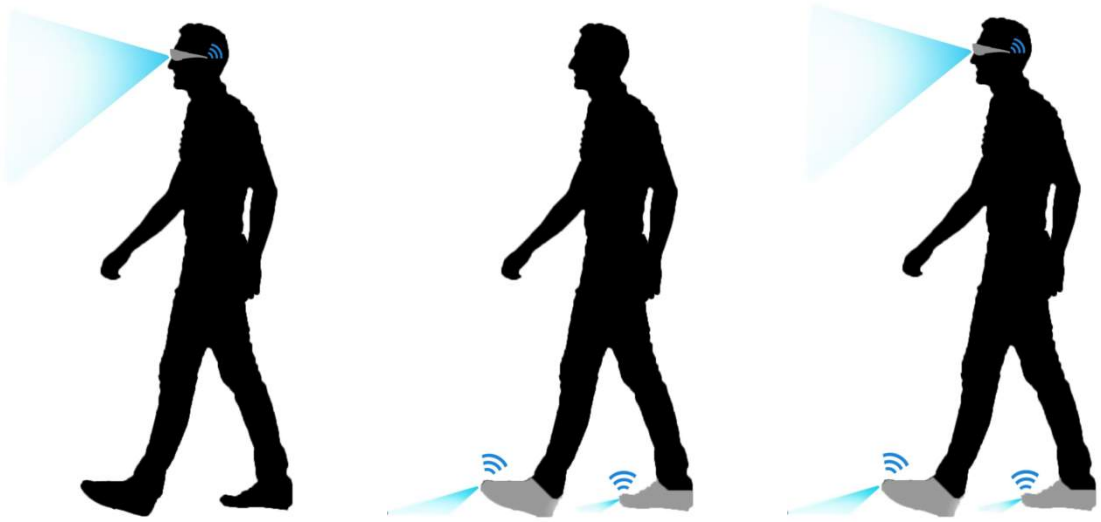
Simple and intuitive

Perceptible information

Tolerance for error

Low physical effort

Size and space for approach and use



Case study 1

Most of the problems we faced involved walking in to people, or walls, and not being able to find our own way. Having an assistant can be useful but it is also tiring, and you want to be able to move around by yourself, without having to always rely on other people.

So we came up with the idea of a sensor, almost like the sensors on a car, that can warn you when you are about to walk into something or give you directions on how to get somewhere. So we came up with the Sight Assist Glasses.

The glasses have sensors in the front and side that will warn you when you get too close to an obstacle. There are small speakers next to the ears that will give

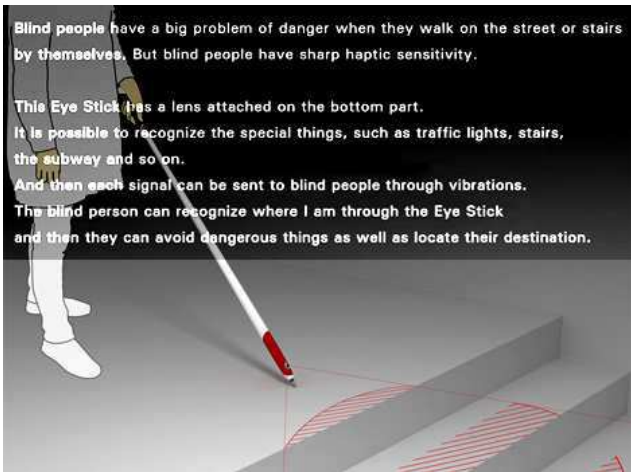
of warning beeps.

The glasses can also connect to your smart phone, and will allow you to use the GPS for directions, that will be spoken directly into your ears, through the glasses.

Case study 2

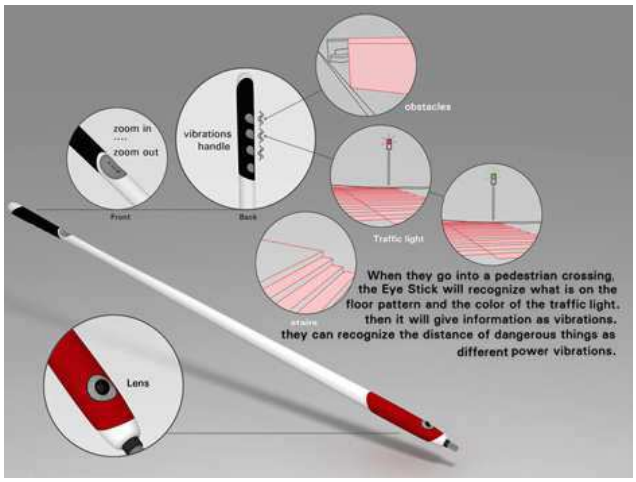
Another problem that we faced was bumpy and trippy road surfaces, and walking up small steps and stairs.

Similar to the glasses we came up with the Sight Assist Shoes that have small sensors in the toes that will pick up on any rough surfaces on the ground, like potholes or bumps or small steps.

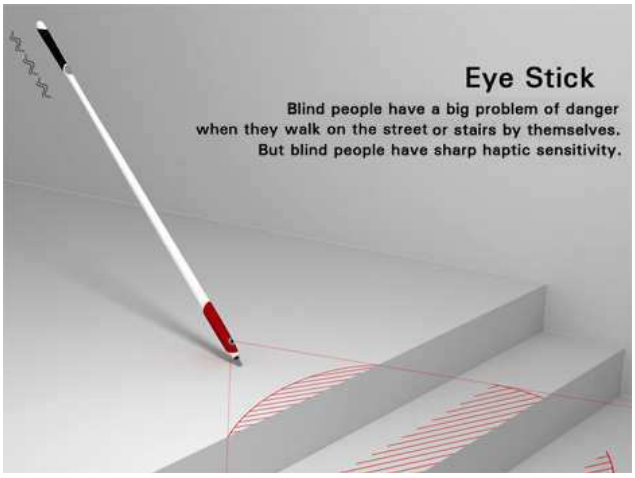


The shoes have sensors in the tips that will warn you if the ground has any large or small bumps or holes, or if the ground is irregular. It can make either a beeping noise or vibrate under your foot.

Besides from being use separately the Sight Assist Glasses and Shoes can also be used together, for the ultimate Assist experience. The shoes will match up with the glasses and relay any information about the ground in front of you right to your ears through the glasses.



Case Study 1: Eye Stick



solve the problem of stairs

Attached lens can recognize traffic lights, stairs and etc.

vibrate when there's situation

Case Study 2: Munivo

improve everyday live for people who are blind

use ultrasound technology as distance measurement sensors

give pressure to direct the subject to avoid any obstacle appeared

Conclusion

To conclude, the entire task had been a very fun and learning experience for the whole group. It was difficult at some moments, but also very understanding at others. We stepped into the shoes of what it feel like to experience blindness and total aloofness from the world, in terms of sight. All you have is a bunch of noises coming around from various different directions, and our disability does not even allow us to know which direction it is, or who is saying or what someone looks like, and how things look like around us, in the surrounding that we live in every day. All in all, it was a very mind opening task that we performed for the first time in our lives, that gave us a very different perspective to universal design and why is it important to design in a way that can be used by everyone, with any kind of disability. It shows and teaches us that everyone is equal and we need to consider everyone when we design for all. It shows the needs and wants of the disabled people and gives young designers new dimensions to their designing future.

3.6 | Being blind and my experiences

PavaritP., WanwisaY., NattavutP., ManopatC., ChanonP., and Varintorn K.

The volunteer in the experiment will has to act like the blind people which they will lose the perception of seeing which they can using just the sense of the smelling, touching, and hearing a thing from surrounding from the environment around them. The starting point will be in the front of the Architecture building to the toilet in other building which the volunteer has to walk cross the road to that building.

Sense of the seeing was unusable and they have to use other three senses of hearing, touching, and smelling to bring them walk to the destination to complete the task that provided. The sense of hearing can help them to hear the sound from surrounding place and the sound that they will hear will be people talking along the street, sound from the car engine, and the beep horn sound from the car. In additional, they will also hear the sound of the whistle from the security guard which stands on the road that they will cross to another side of the road to the destination building. The sound from the whistle from the security guard will make our volunteer cross the road properly without the accident.

The second sense that they will receive or use is the sense of touching. The sense of the touching will be secondary touching or the primary touching. The secondary touching is the touching that the user will receive from the stick which they will use in the experiment to act like the blind people to use when they walk which this stick can help the blind people avoid or evade from crashing or hitting the obstacle in front of them which in this task the obstacle will be people, car, column, wall, chair. Moreover, the stick will can use as the sensor for the volunteer in the task to avoid another obstacle or the different floor level which they can stumble in to the floor which can be occur the damage or the wound on those volunteer. In additional, the stick will help the volunteer to avoid hitting the

chair that lies on the side along the walkway because those chair setting place was inappropriate and dangerous not only for the volunteer that act as the blind person but the normal people sometime they usually hit this chair while looking to the nearby places. The primary touching is the touching that we use in everyday life which is by using our hand to touch on the object, catch the object, hold the object, or feel the surface of the object. The volunteer will usually use their hand with the wall or the column to help them create the map in their head and to help them and direct them to the correct direction to the destination. The volunteer can use the hand to touch the surface of the object that stay in front of them or the nearby object to make them know what is that object look like or know what is the object that they touching. In example, if the volunteer touch the surface of the column that lies along the walkway they will receive the rough surface with stone finishing from that column and can make them know that if they still walking through this direction they will finally reach their direction on the other side of the street.

The third sense of perception that volunteer can use in this experiment was the sense of smelling. At first, our member did not realize that the sense of smelling will not that usable but paradoxically it was on of the important sense that blind person can use in their daily life to make them know that what area which they already reach or which area that they staying. The smell that our volunteer will smell from surrounding will be smell form other people body like body's smell of the perfume, the smell from the car engine that drive along the street, the smell of the toilet which will be bathroom cleaner smell and/or the smell of the urination in the toilet. We believe that different places will have different smells. In example, if our volunteer walk to the library they will get smell from tons of book in the library, if the volunteer go to coffee shop they will get smell of coffee or roasted coffee seed, if the volunteer walk through the bank they will get the smell of the bank note or money. As the example which shown above can show that different place or different zone will have their own characteristic smell from those places

which can make the blind person or the volunteer can realized or know what place, zone, or area that they staying right now.

The other sense that did not use much in this experiment was the sense of tasting. The sense of tasting will be using while they will eat of have the meal but it did not use to direct the way for the volunteer to the direction or destination place.

On the experience from being the blind and walk along with the blind person or the volunteer it shows that the most important sense that they will use for direct the way to the destination will be the sense of touching. The sense of touching will be helpful while they walking to many places which the blind person can write the map and direction in their head to lead their way to the destination without hitting the obstacle along the way that something may be danger for them. Moreover, they can also use their hand to lead the way if they walk along the wall to the exit or to another room. The sense of hearing will be the second sense that will help to the destination and avoid them from the car on the road. Finally, the sense of smelling can told them where the volunteer staying or still walking passing through.

The volunteer will start to walk at the Architectural Building and before start walking we will find the stick and other equipments that try to close their eye and act like the blind person. The stick that the volunteer use will be the stick that has quite long length and has the length equal or nearly to the one that blind person usually use to help them while walking on the street. The eye cover use the fabric that thick or dark enough for binding around volunteer's eye to make them like the blind people and get ready for the experiment that we are going to do.

The starting point will be in front of the Architecture Building Classroom. After the volunteer gets ready by binding their eyes and get the stick for helping them for walk we will start to walk to the toilet on other building. From the first step from being the blind people the volunteer can feel the difficulty of this task. First,

the volunteer has to walk from the class to the elevator. The distance from the classroom to the elevator was not that far but in volunteer's mind the distance is quite far compare with his usual life. He said that he knows the direction to the elevator but he does not know how far it is. He has to listen to the sound from the elevator and the try to touch the wall and they move to the elevator because if he was not touch the wall he may be misdirection. After he gets to in front of the elevator, it was second time that he can feel the difficult because he does not know where is the elevator button and it was the second time that the volunteer has to touch the wall all around to find the button of the elevator. After he can push the elevator button to call elevator to come up to receive him from the floor that the volunteer was staying, he was quite sure that the button that he push was the correct one because there was only two button at first; one button for go up and another button for going down. After he can get into the elevator the volunteer was get stressed because he does not know that there is anybody in the elevator or not. Moreover, the volunteer said that he does not know where to stand and where is the button in the elevator. This time the volunteer can find another difficult task because in the elevator of Architecture Building does not contain the bell alphabet for blind people in the elevator button, therefore, he has to count the button and try to find the first floor. After the elevator was moving down, he said that it quite difficult to know when he will arrive because the sound of the elevator will play when they arrive every floor and the sound is just the beep sound but no sound that make him know which floor that he was arrive. Therefore, he has to wait until can feel that the elevator was completely stop and to be sure that the volunteer was already arrived the first floor of Architecture Building.

After walk out the elevator he has to walk straight to the entrance or the exit of the building and the helping from the other people nearby him because on the first floor it quite wide and there is many display item and seat around the ground floor. The first thing that the volunteer has to face after get out from the building is to walk down the stair by using the stick to find and evade the obstacle and as

well as to avoid stair step because these steps have different level and it was the first and one of the difficult task that the volunteer has to pass it. For the stair step level was danger because acts like the blind people in the first time they must feel not comfort in this situation and the different level of the step on the stair may cause them danger or fall into the ground and occur the accident. In some case the falling action from the stair may cause the wound or the accident with their head.

After the volunteer walk down the stair the volunteer try to walk down to the road between the building of Architecture and Communication Arts like the usual that he usually walk down into the street before leaving this area. However, there are the cars that park on the road between, therefore, he hits with a car that parking along the road when he walked down from the stair. At first he does not realize that this time there going to be the car parking there so he walks as usual.

When he walks down to the road between the buildings to the main circulation to the main building, they are going to be the step which is a bit higher from the road to the main path. Therefore, this time he has to make sure and check the path or his walkway with his stick in his hand to make sure that it does not has any obstacle or the people on the way he walking through. Then he walks straight to the main path. With his stick in his hand that he using, he can feel that it was something lies in front of him because it touches his stick, so he know that in front of him was any obstacles or the step for sure. After using the sense of touching by his stick on the things in front of him so he realized that it was the step before enter the main circulation. Then he walk up the step and continue using his stick on the walkway which connect to the main path, he can feel that some part of the ground will be the hole because those area on the path that connect to the main path circulation is use the brick block that has the hole in side of them so maybe he can feel not only the surface and hole but he can also feel the softness from the plant or grass which is planting around those walkway.

After walking passes the connecting path, he can now enter the main circulation. Moreover, after he walks into the main circulation path, he can remember that he must turn right and keep continue walking to get to the main building to use the toilet which is the final destination for this experiment. When he start to walk into the main circulation path then there is one thing that the volunteer think about that he surely hit with someone that walk in the main walkway because at that time, the time was almost noon and people who finish the class will walk to the Au mall to have something to eat for lunch or people who is going to go to van station to get into the van back to their home and their destination. Moreover, he said that the swing distance of the stick was almost fit with the circulation this is why he cannot move his stick that much. At that time the volunteer can hear many people talking and walking pass through him to another way. He feels like the stick that he holds will hit the people who walking in the main walkway path. And after he walk for a while his stick has hit something on the side and when he try to touching them so he realized that the thing that he hit and the thing that he touch has the rough surface, therefore, he can know that this object is the column which is lie along the main walkway path. Moreover, there is another thing that the volunteer hit for the second time is the chair. It was because the chair that locates along the main walkway path was place inappropriate and it was effect the circulation or the path even the normal people walk in this main walkway path something they still hit these chair. The third thing user hit when he was at a bin on the side of the main walkway. He knows that this obstacle or this item was the bin because from touching and the sound when the stick hit the bin was the sound that something hit the metallic thing.

After he can come out of the main walkway path, he know because the column that used to locate along the main walkway was missing, he try to walk to the end of the footpath by using his ear to listen to the car engine and the whistle from the security guard who standing near the road. He can stop at the end perfectly because the security guard says to him to stop walking for a while. After stopping at the end of the footpath for a while, the security guard uses his whistle to stop

the car that moving on the road and let our volunteer to cross the road. The volunteer said that this time that he crossing the road the distance was quite far from usual and the volunteer also said that he does not know when he will completely cross the road because he cannot see the other side so now he has to walk and run to the other side and try to use his stick in his hand to check that he was already reach other side of the road safely.

After the volunteer walked across the road to the main building side or which we called "SM Building side" or "center" of the university. The volunteer has to use his stick again to walk straight to the main building but his stick hit on something and when he use his stick again to find out what is the thing that locate in front of him, he can realized that the thing that locate in front of him must be the stair that go up in to the main building which is "center". This time that he use the stick to walk up the stair he has to use it carefully because he can hear the sound of many people talking and chatting around the center. He sure that center is now crowded with many people who already finish the class and waiting for their friend. This time he has to ask his friend to lead him to toilet because there are too many people over there in the center.

When he can walk to the toilet in the SM Building he has to touch the door to find the hand rail on the door and try to push the door to get into the toilet. Then after he can get into the toilet he has to find the way to the urinal which his friend said the urinal was locate on the right hand side. After he finishes his duty he has to find the sink or the basin so the volunteer can wash their hand. He has to walk to the opposite side of the toilet room and try to use his hand touch the door of the toilet, therefore it can lead him to the basin to wash and clean his hand off.

After finish the task at the SM Building, the volunteer has to walk back to the Architecture Building which is locating opposite of the side that he staying. However, this time when the volunteer has to walk back to Architect Building it quite much easier than the first time that the volunteer walk to SM Building because the volunteer said that this time he already know how to walk back and

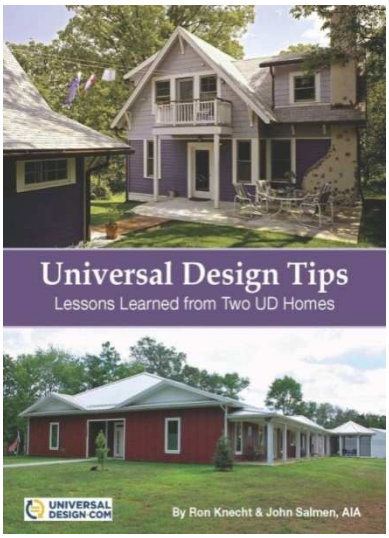
know the location and the obstacle which locate in those area already. Therefore, the time he can walk back to the Architecture Building much faster than the first time.

New Books:

A New eBook from UniversalDesign.com

Universal Design Tips: Lessons Learned from Two UD homes

This new electronic book from UniversalDesign.com is filled with tips and ideas that will help guide anyone through the process of designing and constructing their own Universally Designed home. The book was co-authored by John Salmen, AIA, the publisher of *Universal Design News* and founder of UniversalDesign.com, and Ron Knecht, whose durable, energy efficient Universally Designed house was featured in the January 2012 issueof*Universal Design News.*



The first section of the book deals with the planning process, providing insight on how to choose a location for the house, consider activities of daily living during planning, best use various types of design professionals, finalize a floor plan and develop a building schedule.

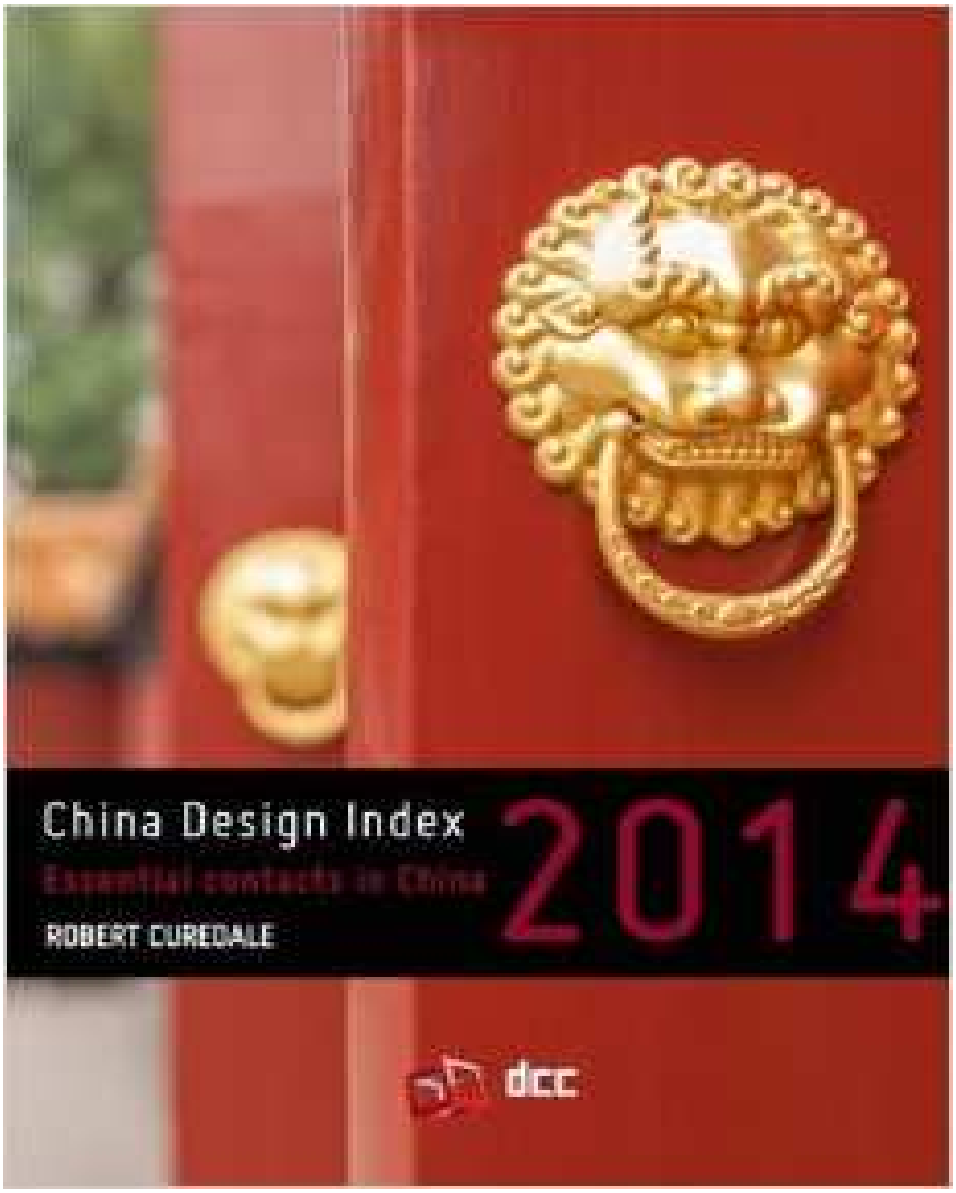
The rest of the book is organized according to different areas or elements of the home (i.e. exterior doors, bathing, and kitchen counters, just to name a few.) Whether designing a whole house or simply remodeling one area, *Universal Design Tips* makes it easy to quickly refer to the relevant section and find valuable tips that ensure success. Each of these sections includes design tips, photos and important lessons that the two authors learned through their personal projects.

John Salmen has been working in the field of accessible architecture and Universal Design for over 30 years, and he put this expertise to good use when remodeling a historic property to create the Universally Designed house he and his wife hope to live in for many years. Salmen's "Home for the Next 50 Years" has been featured in various media outlets: including *The Washington Post*, *Fine Homebuilding*, AARP's television show *Inside E Street* and the book *The Accessible Home: Designing for All Ages and Abilities*. Now, readers will be able to explore Salmen's home in even greater detail and apply his experience to their own Universally Designed home projects.

Ron Knecht's experience with Universal Design started after his wife of 46 years became ill with cancer. As her health worsened, Knecht learned first-hand the importance of

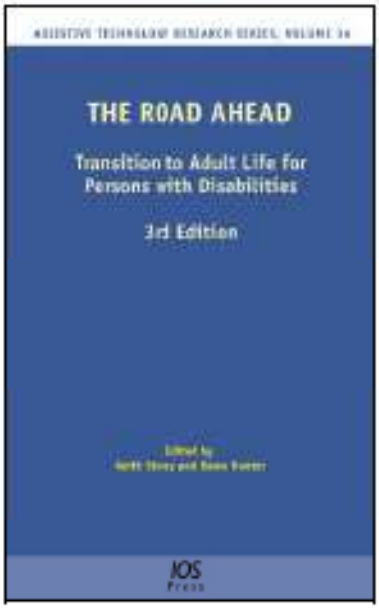
accessibility for maintaining independence, safety and one's quality of life. Before Knecht's wife passed away, she extracted a promise from him that he would move to a Universally Designed house located closer to their daughter. Knecht was underwhelmed by both the houses that he saw on the market and the UD house plans that he found online; he realized that he would have to plan and build a custom house in order to fulfill his promise.

China Design Index 2014



China Design Index 2014: The essential directory of contacts for designers Paperback – February 1, 2014 by Robert A. Curedale (Author)

The Road Ahead, Transition to Adult Life for Persons with Disabilities



The Road Ahead

Transition to Adult Life for Persons with Disabilities

Volume 34 Assistive Technology Research Series
Editors: Storey, K., Hunter, D.
December 2013, 318 pp., hardcover (revised 3rd edition)
ISBN 978-1-61499-312-4 (print)
ISBN 978-1-61499-313-1 (online)
Price: €69 / US$100 / £59

Successful transition from school to adult life has always been difficult for people with disabilities, especially in the area of employment. The vast majority of people with disabilities are either unemployed or underemployed with low wages and few benefits, and many governments are struggling to find a way of providing employment and benefits to people with disabilities without creating disincentives to work.

This book provides strategies and ideas for improving the lives of people with disabilities, exploring new ways of enabling a successful transition to an integrated adult working life by providing effective instruction and support. Following an introduction which outlines the importance of transition services and meaningful outcomes, topics covered in the remaining chapters include: person centered transition planning; enhancing competence and independence; employment assessment and career development; collaboration between agencies for a seamless transition; independent living and supported living; and community functioning skills.

The book will be of interest to all those who work with transition age students as well as those who work with adults with disabilities and want to enable them to have the best life possible. To paraphrase Helen Keller: "People with disabilities not only need to be given lives, they need to be given lives worth living."

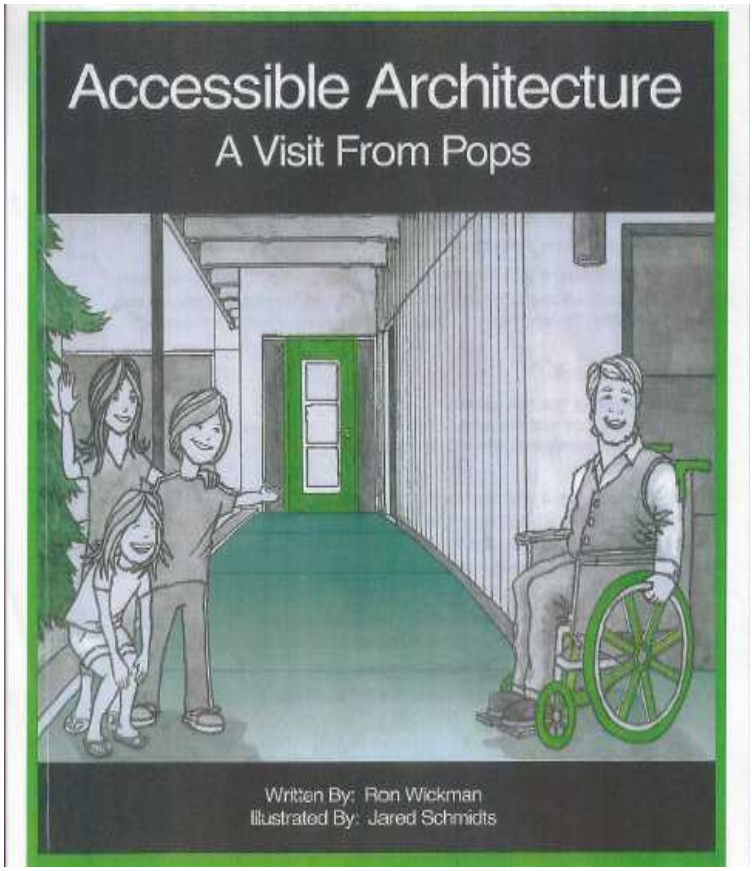
Design for ALL, Aree DI Ristoro

Luigi Bandini Buti
DESIGN FOR ALL | AREE DI RISTORO | il caso Autogrill |
Maggioli Editore, 2013
http://shop.wki.it/risultatoricerca.aspx?indizioricerca=luigi+bandini+buti

This book has been born following the collaboration with Autogrill that, for its new facilities "Villoresi Est", has developed an innovative, Design for All oriented project. We then realized that the cares foreseen for "all" would not be noted by "the majority".
If you are not on a wheel-chair, or blind, or you are not travelling with a large family or you don't have to look after your old grand-father, you will not be able to appreciate many of the attentions included into the project. It was therefore necessary to make more visible the virtuosity of the planning process and its results, which may not appear obvious to many people.

This publication is not meant to be a mere description, it is rather a critical analysis of the Villoresi Est rest area, included in a context that wants to examine in depth the methods and the means of Design for All.
Its main objective is therefore to use the "Autogrill case" to investigate the necessary steps to develop projects Design for all oriented, hopefully in an authoritative way.

Accessible Architecture



Edmonton Architect publishes - Adult Children's Book—Accessible Architecture: A Visit From Pops.

Edmonton Architect Ron Wickman launches his first book titled: ***Accessible Architecture: A Visit From Pops*** at the City Room in City Hall, Tuesday, March 18 at 6 p.m. Ron, son of the late Percy Wickman, MLA Edmonton-Rutherford 1989-2001, is a story written on the focus of Percy and his 3 grandchildren. Ron is best known for his accessible design. His most recent endeavor published by Gemma B. Publishing draws on this knowledge. Edmonton draughtsman Jared Schmidts illustrates with wit and precision the need for a house to be visitable by everyone.

As a child, Ron Wickman learned firsthand about the need for accessibility. His father became paraplegic after being injured by an industrial accident. Ron wheeled his father into many inaccessible places. A longtime Edmonton City Councilor Percy Wickman advocated for people with disabilities throughout his life.

Ron Wickman studied architecture in Edmonton and in Halifax, Nova Scotia, specializing in barrier-free design, designing houses and public spaces that were both beautiful and accessible.

Accessible Architecture: A Visit From Pops—Is an adult children's book, which demonstrates the three principles for ensuring a house can be visited and enjoyed by everyone equally, including those with a disability. Following Wickman's design and renovation also enables homeowners to age in place.

Visitability principles include

- the front entrance must have no steps;
- all main floor doors must be at least 36" wide
- an accessible washroom must be on the entrance floor.

Accessible Architecture: A Visit From Pops, by Ron Wickman, illustrated by Jared Schmidts and edited by Sarah Yates, is published by Gemma B. Publishing, a Winnipeg-based publisher. Gemma B. Publishing creates heroes and heroines living with a disability, in both fiction and non-fiction. The book will be launched at Edmonton City Hall, March 18 at 6 p.m. and available later at Audrey's Books in Edmonton.

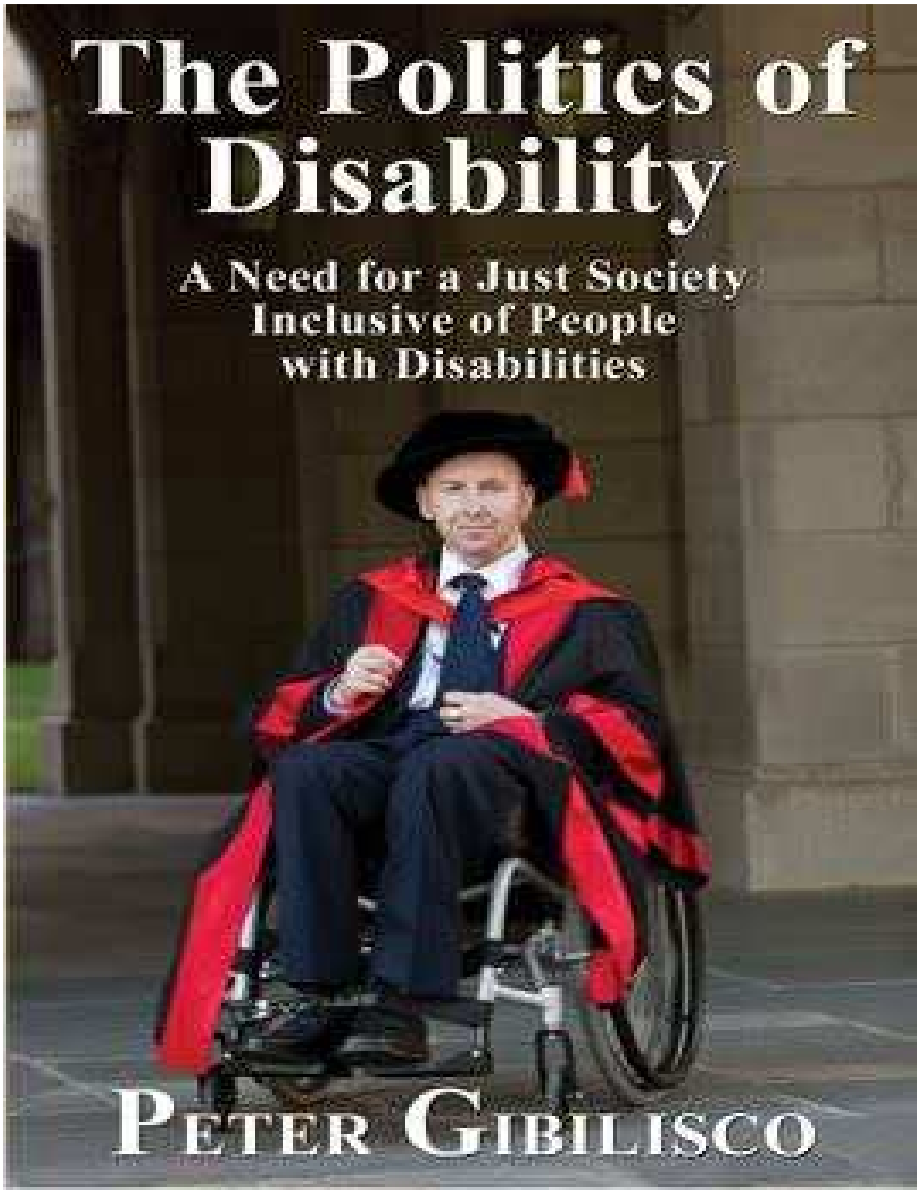
Ron Wickman will be available for interviews after the press conference at City Hall. His lecture at the Buildex Conference, Edmonton Expo Centre, Northlands will be held Wednesday, March 19 at 2:30 p.m.

Accessible Architecture: A Visit From Pops ISBN978-0-991697-0-8 sells for $20.

– 30 –

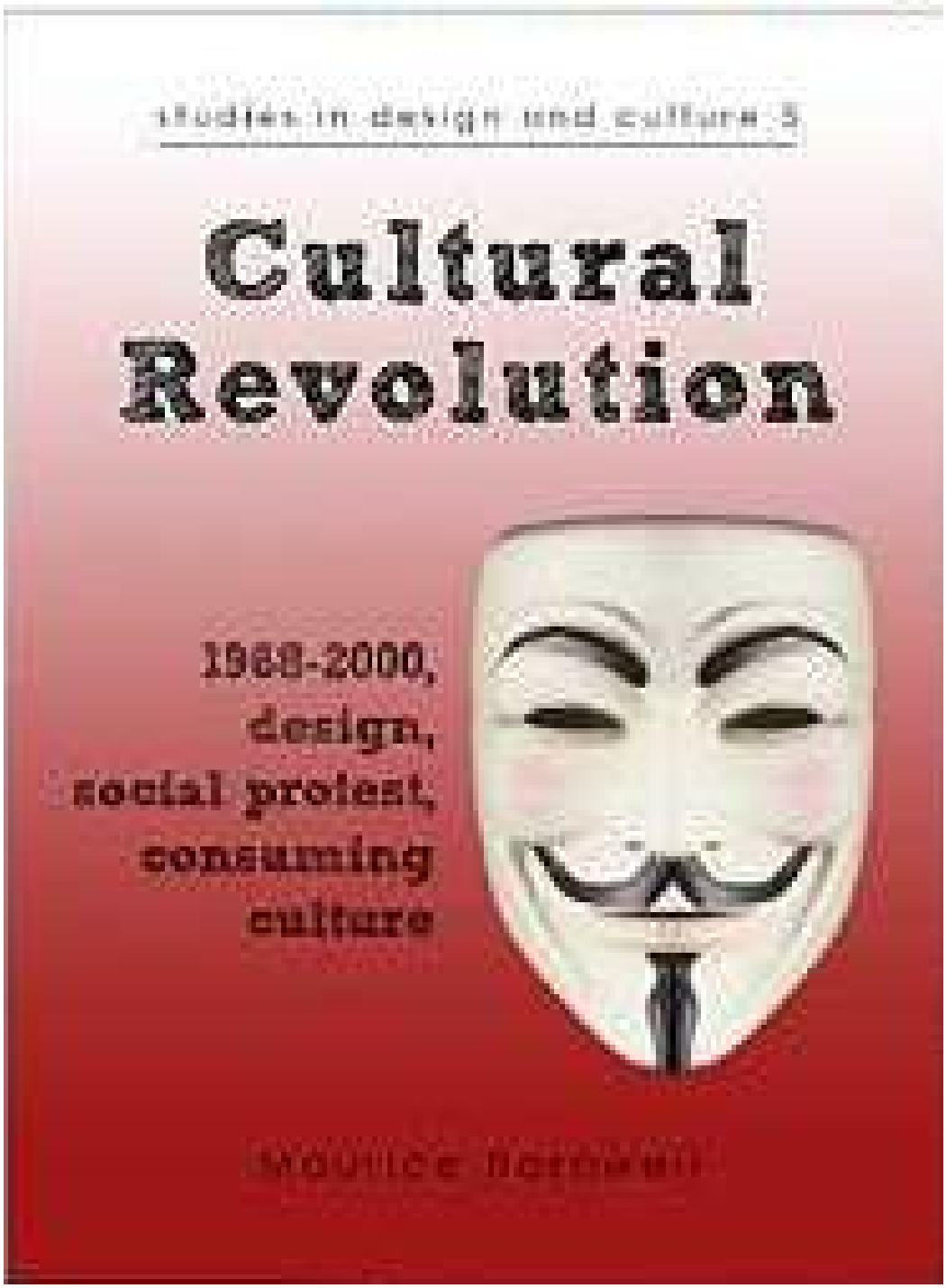
For additional information, contact:
Ron Wickman
Architect
780-430-9935
E-mail: rwickman@shaw.ca

The Politics of Disabilities, Peter Gibilisco



This book will retail for a recommended price of $19.95 USD ISBN 978-1-77143-155-2, with an ebook version also available at a recommended price of $7.95 USD ISBN 978-1-77143-156-9. You'll be able to buy it from all the usual places - Angus & Robertson, Bookworld, Fishpond, Amazon, Kobo, iBookStore, and Google's Play Store, amongst others.

Cultural Revolution by Maurice Barnwell (Author)



Design For All – the project for everyone.

Methods, tools, applications Volume 1 – 2 (Steffan, 2012)

Design for All — the project for everyone. Methods, tools, applications.
Volume 1- 2 (Steffan, 2012)

The publication highlights the multidisciplinarity and cross-disciplinarity of the Design for All approach, both in terms of issues addressed and of field of application. The accessibility of places and objects is nowadays a minimum requirement: it is only the starting point to allow their use by the widest range of people possible. Through professional experience and research, the paper tackles problems, methodologies and working tools, benchmarks.
The first volume covers the main areas of research and presents some examples at urban scale; the second volume illustrates examples of architectural design, products, services, university education.
The lack of compliance of the built environment and of the products, with needs that can be very different, causes a state of handicap. The lack of ability is a handicap only if the project has not taken it into account.
With these books we intend to stimulate debate, in-depth research, specialized studies, so that Design for All can be increasingly known and applied in more and more research and professional areas.

Published in Italian in December 2012 by Maggioli Editore (Santarcangelo di Romagna RN, Italy).
http://ordini.maggioli.it/clienti/product_info.php?products_id=8832 Volume 1
http://ordini.maggioli.it/clienti/product_info.php?products_id=8831 Volume 2
The on-line English version is also available since October 2014:
http://www.maggiolieditore.it/ebook/tecnica/design-for-all-the-project-for-everyone-first-part.html
http://www.maggiolieditore.it/ebook/tecnica/design-for-all-the-project-for-everyone-second-part.html

"Ideas, even good ideas, flourish only when practitioners commit to sharing their experiences, perspectives and aspirations. By organizing this publication and convening a distinguished international group of contributors, Editor Isabella Tiziana Steffan helps to establish the current state-of-the-art and affirms the significant potential of Design-for-All. She also delivers fresh inspiration to an expanded audience critically important to engage if Design-for-All/Universal Design is to realize its promise in the coming years.(...)We salute Editor Steffan for her passion, focus and hard work to bring this valuable contribution to fruition." (Valerie Fletcher)

APPEAL:

Survey for Ph.D. Student

I am currently pursuing my Ph.D. from IIT Delhi in the domain of Industrial Design. My dissertation topic is Design Forecasting with ref to Product innovation.

Please help me by filling this questionnaire. And also recommend it to your friends/juniors/colleagues.

You can find the survey at:-

http://www.surveymonkey.com/s/innovation-forecasting

There are just 14-15 questions related to product innovation and the factors which are important for planning/designing our future. It would not take more than 7-8 minutes to finish this questionnaire. There is also a surprise gift in the end of the survey form, a specially designed poster featuring the great classical products of the last century, in high resolution, ready for print.

Design-for-all is a formidable design community and has a widespread global reach. Through it my survey form can reach design practitioners, academicians and stake holders at various levels. I request you to help me by forwarding this through your mailing list. I am really counting on your help and shall be deeply thankful to you for this.

You may also share it on FB, linked-In, or in your network of friends and recommend it to anyone whom you find appropriate for this study.

Thanks and best regards

Sugandh Malhotra

Mob: 9810296933

NEWS:

Farmington teacher nets Oakland Schools'first 'UDL' award

(Photo: Aileen Wingblad)

When Grace Saleem steps into her seventh grade English class at East Middle School, she's come to expect options.

And that, she said, leads to "learning more — and fun, too."

Her classmate, Malcolm Vinson, said he likes "all the different ways we are learning and understanding new units. It makes it more interesting."

It's all part of Universal Design for Learning which their teacher, Whitney Tyner, is dedicated to incorporating into her classroom, and helping her colleagues do so, too.

And that effort has earned Tyner the distinction of being Oakland Schools's first-ever recipient of the Universal Design for Learning Practitioner's Award. It was presented in her classroom June 3 by Oakland Schools' Bryan Dean and Laura Cummings.

"I'm overwhelmed," she said. "I'm a really passionate person, so when I came to discover I was already using UDL strategies in the classroom, I was the perfect fit for it."

UDL is designed to give every student "an equal opportunity for learning" by offering a variety of ways for them to demonstrate their grasp of material and lessons. It's based on three principals: Engagement by using multiple tools and strategies; Representation, with teachers using different ways to present the same information; and Action and Expression, to allow students to show understanding of a concept in their own way.

The strategies have been around for decades and plenty of teachers use them. But through an Oakland Schools UDL workshop last fall, educators learned "to

name it and notice it in practice, and make sure it's incorporated in everything that's done in the classroom," explained Christopher DeYonke, Tyner's UDL coach and teacher at North Farmington High School.

DeYonke said he's "really proud" of what Tyner has done and continues to do, as well as the recognition she has earned. "She's someone who has always been a good teacher, but also willing to learn something new," he said.

As Dean describes it, "She came to our (workshop) last fall and was on fire. Then she just caught that fire even more."

Tyner said she has definitely seen students' interest and enthusiasm increase since consciously incorporating UDL in all her lesson plans. "The kids are probably more engaged than ever," she said. "They are proud of their work and excited about learning."

Tyner also said she's "honored to be a part of this district. Farmington teachers work diligently to incorporate best practice in the classroom. My students have never been more motivated, and UDL gives them opportunities to 'blow my mind.' "

Another of her students, Brody Jamieson, said he's "way more interested" in school because of what goes on in class. He particularly likes the "freedom" UDL gives, which he said, makes school fun.

"And everyone is at different levels, so this helps you use your level to your ability."

Classmate Paloma Adams agrees UDL makes a huge difference. "I'm definitely willing to put a lot more effort in," she said. "It makes everything more fun and interesting."

awingblad@hometownlife.com | 248-390-3976 Twitter:@awingblad

2.

Universal Design Specialists Announces US Made Designer Handicap Showers from Best Bath Systems

DESIGNER HANDICAPPED SHOWER

Universal Design Specialists announced that the very latest US Made Designer Handicap Showers from Best Bath Systems are now available for purchase!

Universal Design Specialists announced that the latest US Made designer handicap showers from Best Bath Systems are now available for purchase through their Internet Website at www.universaldesignspecialists.com.

The unique aspect of these specific handicap shower stalls is that they include a pre-determined 3/8" recess in the shower walls that allow for the tile of choice to be installed on any of the walls, thereby offering the option to totally customize the look of a handicapped shower at a fraction of the costs typical of a tiled shower. This recess is encased and protected within the shower walls facilitating easy tile installation which is simple to maintain and eliminates future concerns of possible water damage. In this way the beauty of tile can be enjoyed without the worries and upkeep typical of regular tile installations. Tile recesses can be completed on either one, two or three walls of your choice. The bonus is that although one can create a totally custom look as a result of this unique option, the costs of these customizable handicapped shower enclosures is the same price as the standard same size best bath shower pans that don't include this option. If some other model is desired other than the 26 units currently available, they too can be customized with a tile cut out for only a small up-charge over the regular price of that handicapped shower. Cutouts are available in all these other showers on all walls.

There are currently 18 barrier free curb-less models that provide for roll in access and 2 curbed shower models available to be customized which were selected from Best Bath Systems most popular models. These Designer walk in handicap showers are available in sizes 48x34, 60x30, 60x36 & 60x42 with left hand and right hand drain options for standard bathtub replacement applications as well as a regular center drain option. In addition to what is available with these creative units every handicap walk in shower is also available in 253 plain and granite colors to further customize the look. If this is not enough to choose from, the company will also custom color the handicap walk in shower of your choice in any color from well-known national painting companies such as Glidden, Sherwin Williams & Kelly Moore. With a 3 day lead time in the factory for standard colors and only 2-3 days more for custom colors the sky is virtually the limit when it comes to customizing barrier free Best Bath handicap showers.

As with all their shower product, every walk in shower includes plywood in the walls for easy and sturdy installation of any accessory item and an unprecedented 30 year warranty from a truly US Company offering a genuine, quality US-Made product. Adding to this value, Universal Design Specialists always includes Free Shipping in 48 States with any walk in shower you purchase from them.

For further info call (800) 481-1808 or send an inquiry to info@universaldesignspecialists.com
Universal Design Specialists, Inc.
(800) 481-1808
(courtesy: einpresswire)

3.

Sign-language library wins international accessibility award

The Finnish Association of the Deaf has received international recognition for its sign language library. The award was granted for the library's innovative use of technological solutions in promoting accessibility.

The UK-based, globally awarded Jodi Awards reward innovation and excellence in the use of digital media to widen access to museums, galleries, heritage sites, libraries and archives for people with disabilities.

The Finnish Association of the Deaf won a nod at the prestigious prize-giving ceremony at the British Library in London for its pioneering new service, The Sign Language eLibrary of Finland.

The project makes available 250 filmed sign language versions of books, with new videos being added to the collection on a weekly basis. The sign language eLibrary has been accepted as part of the library network in Finland.

Judges praised the national scale of this new project, and commended the positive role it plays in bridging gaps between communities.

(Source: Yle)

PROGRAM & EVENTS:

RFT Awards

Transportation connects us all.

Whether it's simply getting from home to work or using products shipped over distances near and far, in every region of the world transportation impacts our daily lives.

At first glance, transportation may simply appear to be about the movement of people and goods. But looking deeper, it's also closely linked to equality, access to healthy food and good schools, and wildlife impacts, for example.

As the mobility demands of people and freight have grown, so too has the need for products, systems, and services that will make the transportation sector more life-friendly, for both people and the planet.

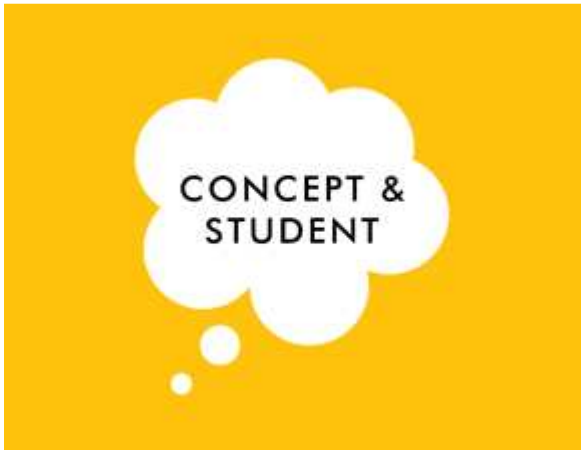
Registration is now open

Learn biomimicry and how to apply it while competing for cash prizes with students from around the world.

Register your team for immediate access to the biomimicry design resources and start developing your design solution today!

The Biennale Internationale Design SaintÉtienne 2015

The Spark 8th Annual International Awards

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Transcend 2015

Interaction Awards 2015

AIM and MANAGE for Inclusive Access

EBU, The Vision for Equality Award

The voice of blind and partially sighted people in Europe

The Vision for Equality Award

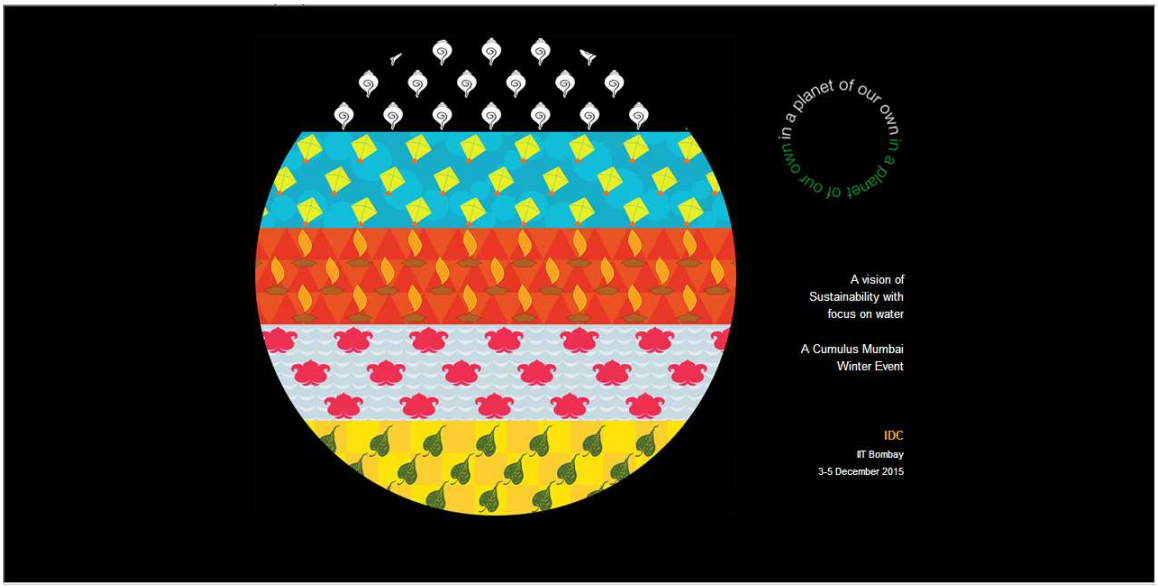
The EBU Vision for Equality Award is given to European organisations, institutions, policy makers, enterprises or individuals in recognition of their commitment to protect and promote the rights of blind and partially sighted people and to improve their living conditions. The Award, which consists of a certificate and a piece of art by a visually impaired artist, is presented every four years on the occasion of EBU general assemblies.

Nominations may be put forward by EBU national members and are processed by the EBU Awards Working Group.

CALL FOR NOMINATIONS FOR THE 2015 EBU "VISION FOR EQUALITY" AWARD

ICED 2015 – Design for Life

A Planet of Our Own Cartoon Competition



Cartoon Competition

We invite you to participate to showcase your ideas on sustainability during the Cumulus Mumbai 2015: In a planet of our own - - a vision of sustainability with focus on water' by submitting a Cartoon created by you.

Design Cartoons on the theme of Sustainability with focus on Water

We invite cartoons which humorously communicate the seriousness of the theme, by rethinking sustainability with respect to water in terms of conservation, preservation and recycling. Rethink situations, rethink water, life, thirst, cleanliness, greenary, energy resources and everything else we use day in and day out to keep going. Rethink and depict how the saving of water that can fully give a new lease of life by either going back to nature or going back into the design process as a new paradigm that can affect our world..
Cartoonists are invited to interpret the theme of the event ‘In a Planet of Our Own – a vision of Sustainability with focus on Water' as representations through designing of Cartoons. The **Winning Entries:**

1. The winning cartoons will be displayed as an exhibition during the event. We expect the exhibition to travel to other places as part of other events.
2. The winning entries will also be published as part of a book to be released

during the conference in December 2015.
3. Each of the winning participants will receive 5 copies of the book.
4. The winning participants will also be given the 'Certificate of Winning the Cartoon Competition'.Partnership:

This competition is done in partnership with Usability Matters.Org
The Jury and the Judgment Criteria:

The jury will be well-known professionals and socially active personalities. The names will be announced in due course. For judgment, the jury will use criteria such as creativity, humor, visual communication, presentation, persuasiveness, originality, cleverness, relevance of content and execution.

Submission Guidelines:

Entries : up to 5 cartoons per person

Size (hard-copy): A4 (210 X 297 mm) or A3 (297 X 410)
Size (digital): 300dpi and in dimensions of A4 or roughly 2500 x 3500pixels
Please make sure the resolution is 300 dpi so that it is suitable for printing

Technique: free - can be either hand drawn or digital using any medium

and email these with the subject line 'Cartoons' to:
contact@inaplanetofourown.net

or snail mail to:
Cartoons - in a planet of our own

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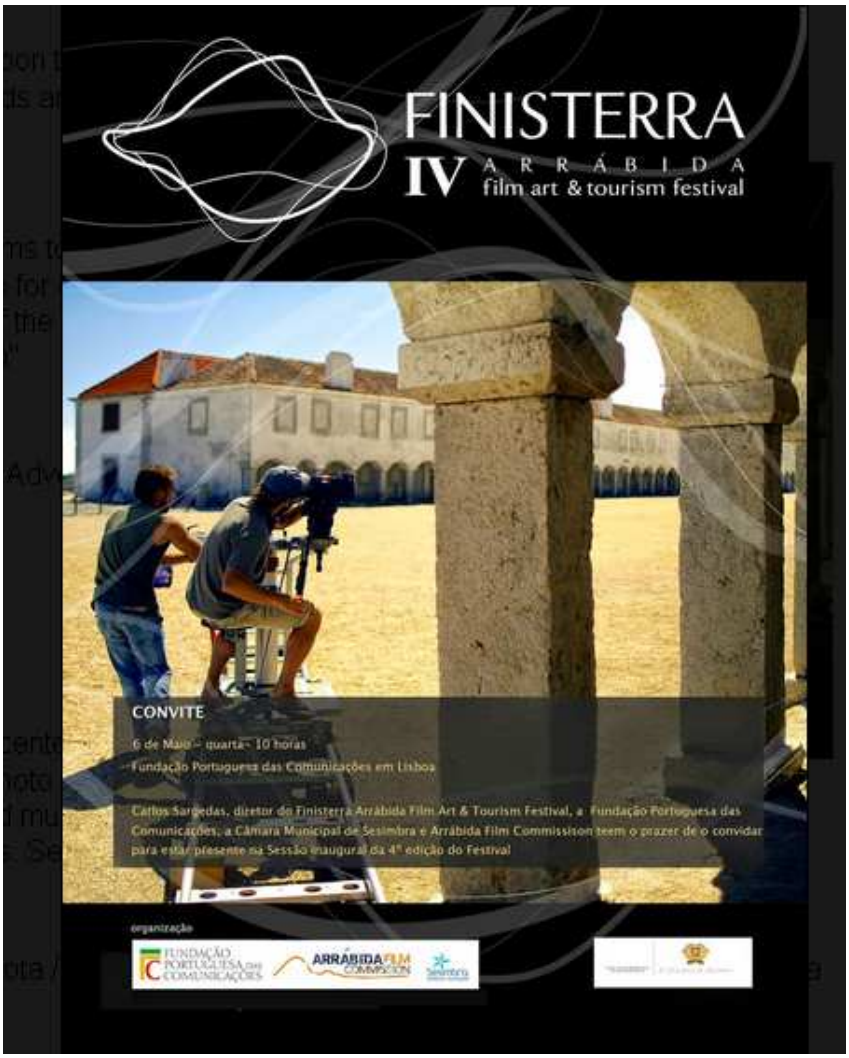
FINISTERRA
IV ARRÁBIDA
film art & tourism festival
CONVITE
6 de Maio – quarta- 10 horas
Fundação Portuguesa das Comunicações em Lisboa
Carlos Sargedas, diretor do Finisterra Arrábida Film Art & Tourism Festival, a Fundação Portuguesa das Comunicações, a Câmara Municipal de Sesimbra e Arrábida Film Commission teem o prazer de o convidar para estar presente na Sessão inaugural da 4ª edição do Festival
organização
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Job Openings:

1.

We have a urgent openings for UI.
3+ experience
If anyone has interested please share your updated profile along with portfolio URL to jj.uxdesigner@gmail.com

2.

Please reply to subhashish.lahiri@symphonyteleca.com with you updated cv and portfolio.

As discussed below is the JD for the interaction designer we discussed over chat the other day. The JD says anything above 5 years but we are ok to take Principal / Lead Designers too.

Bachelor's degree in design, human computer interaction or information science) or equivalent work experience

§ 5+ years of experience as an interaction designer, usability analyst, user- experience architect or similar role

§ Strong problem identification and solving skills

High level proficiency with prototype tools such as Just in Mind or Axure

§ Highly desired experience working with native mobile app interactive patterns and responsive designs.

§ Experience working in corporate software, interactive agency or Internet consulting environments.

§ Knowledge and experience incorporating user-centered design principles, processes, and techniques

§ Works well in a multidiscipline team environment

§ Strong communication skills, oral and written; able to engender trust and respect of peers and stakeholders

§ Commitment to the customer and to product quality

§ Champion for the product and the customer's needs and implements a model of continuous improvement in both company goals and project related tasks

§ Capable of juggling a number of priorities and delivering results in a high pressure, dynamic environment

§ Understands a broad range of UX patterns and solutions, knowing how, when, and even when not to use them

We are using Balsamiq, Sketch, Adobe tools for the purpose and knowing these tools will help. Please circulate among your friends.

3.

Wipro Lighting is looking Industrial design student who is looking for 6 month of internship/diploma project. Pl forward your resume and portfolio not exceeding 10 mb in a single mail at Rajesh.Sangewar@wipro.com

Wipro Lighting is in the business of manufacturing and marketing Wipro and Cleanray Brand of Luminaries, Lamps and Accessories. Wipro Lighting caters to both institutional and retail consumers and offers comprehensive lighting solutions across various application areas. At Wipro lighting, Product design and innovation is key business growth driver and considered to be the prime differentiator in market. Wipro Lighting is part of the Wipro Consumer Care & Lighting Division of Wipro Limited with diversified interests in Information Technology, Healthcare, Infrastructure Engineering and Consumer Care.

4.

Anyone looking to apply can mail me their CVs at ankur.v@vserv.com with following details

Current/ Expected CTC

Notice period

Current employer and reason for leaving

JD - User Interface Designer

DNA Skills

·Ensures smooth presenting, refining, specifying and potentially integrating work with engineering, marketing, and operations – all within specified guidelines and timelines.

·Strategically design the customer experience, identify all potential customer scenarios, and write flow diagrams to share with product management and engineering teams.

·Conduct user requirement analysis to identify key current and future customer needs

·Drive design strategy, project approach and scoping.

·Develop conceptual diagrams, wireframes, interaction flows, and visual mockups to effectively communicate product intent.

·Effectively communicate product usability issues and design options to team members and leadership.

Developmental -

·Lead interaction design through the development lifecycle, from initial exploration through final design deliverables such as use cases, task flows and user interface elements.

· Ensure all Design and Usability needs are executed on time and at a high standard. Proactively obtain feedback and information to drive design decisions.

· Set priorities, manage scope and provide actionable guidance to ensure delivery.

· Advocate consistency of user interface design while fostering consensus and understanding of the customer-centric intersection between Design, Usability, Content, Business and Marketing viewpoints.

Strategic –

· Fluency in best practices for web-based information architecture and design, as well as fundamental usability principles. Strong understanding of user-centered design process, Human Factors design.

· Quickly understand broad strategic concepts, capable of focusing on the details level to weigh options and identify tactical product solutions.

Skill Set –

·Experience with appropriate design tools including Fireworks, Illustrator, Photoshop, etc.

· Experience with some kind of prototyping tool (Axure, Balsamiq, etc.)

· Documenting application navigation, interaction flows, page-level feature and functionality.

Profile -

- **Requires 4-5 years of work experience in relevant field**
- **Strong design portfolio is a must displaying good UI and Visual design skills**
- **Good communication skills preferred**

5.

We are looking for a User Research Intern for 4-6 months at PeepalDesign, a UX Design and Research Consulting Firm in Bangalore.

If you meet the below criteria, we would love to hear from you:

1. Doing your Bachelors or Masters in Research/Design

2. Excellent communication skills

3. Passionate about user research

4. Interested in a 4-6 months internship from July (minimum 4 months internship).

Please send your resumes to mrudula@peepaldesign.com

6.

This is to inform all interested that faculty positions are available at the School of Design, Ambedkar University Delhi.

The school offers full time Masters programme in Social Design and already has two cohorts. The first batch will be graduating in December 2015.

These are regular full time positions of Assistant Professor level. Details and online applications are available on the University website www.aud.ac.in

The last date for applications is 30th June 2015.

I request you all to spread the word around to interested design practitioners and academics. Anyone wanting to know more may reach me at jatin@aud.ac.in

7.

About Taskbob

Taskbob is a technology enabled start-up with a vision of creating happy households. We aim to revolutionise home services in India by adopting an "Uber for home services" approach. The founders are alumni of IIT Bombay and IIM Ahmedabad (ex-McKinsey, ex-Nomura, ex-entrepreneurs). We have secured a large round of VC funding and are keen to build a strong core team to join us in this exciting journey.

Job Description - Core team (Design)

If you enjoy solving challenging, real world problems; if you believe technology can be used to improve people's lives; if you are keen to learn and build an awesome product; if you hate sub-standard, unprofessional service; if you like taking ownership and enjoy your independence, then you're the right person for this job.

Creating impact through distinctive design is at the core of our DNA. Be it product design, UI / UX, web interfaces or marketing communications - we believe that a simple, creative and intuitive design can make a lot of difference. To achieve this, we see design as one of our core functions and we are in the process of building a strong team of highly skilled and experienced designers.

This team would be the final authority for all design related decision making and execution to help us achieve our vision.

Other details

Desired background: Premier design school with relevant experience (preferably in a fast paced start up)

Location: Powai, Mumbai

Compensation: CTC of Rs 7-20 lakhs (Based upon experience) + Significant ESOPs

Joining date: ASAP - within next 1-2 months

Interested? Apply now!

Our interview process is fairly straightforward with just 2-3 quick rounds of interview. Just drop a mail to abhiroop@taskbob.com along with your CV. We will take it forward from there.

8.

User Interface Designer

Experience : 4 - 5 Yrs

Qualification : Relevant experience and strong portfolio

Location : Mumbai

Job Description

DNA Skills

• Ensures smooth presenting, refining, specifying and potentially integrating work with engineering, marketing, and operations – all within specified guidelines and timelines.
• Strategically design the customer experience, identify all potential customer scenarios, and write flow diagrams to share with product management and engineering teams.
• Conduct user requirement analysis to identify key current and future customer needs
•Drive design strategy, project approach and scoping.
• Develop conceptual diagrams, wireframes, interaction flows, and visual mockups to effectively communicate product intent.
• Effectively communicate product usability issues and design options to team members and leadership.

Developmental -

• Lead interaction design through the development lifecycle, from initial exploration through final design deliverables such as use cases, task flows and user interface elements.
• Ensure all Design and Usability needs are executed on time and at a high standard. Proactively obtain feedback and information to drive design decisions.
• Set priorities, manage scope and provide actionable guidance to ensure delivery.
• Advocate consistency of user interface design while fostering consensus and understanding of the customer-centric intersection between Design, Usability, Content, Business and Marketing viewpoints.

Strategic –

• Fluency in best practices for web-based information architecture and design, as well as fundamental usability principles. Strong understanding of user-centered design process, Human Factors design.

• Quickly understand broad strategic concepts, capable of focusing on the details level to weigh options and identify tactical product solutions.

Skills

Skill Set –

• Experience with appropriate design tools including Fireworks, Illustrator, Photoshop, etc.
• Experience with some kind of prototyping tool (Axure, Balsamiq, etc.)
• Documenting application navigation, interaction flows, page-level feature and functionality.

Profile -
• Requires 4-5 years of work experience in relevant field
• Strong design portfolio is a must displaying good UI and Visual design skills
• Good communication skills preferred

About the Company:

Vserv is the leading smart data platform for mobile marketing and commerce. The platform has the largest mobile internet user base in India & Southeast Asia with unique and rich insights on these users. Vserv's revolutionary platform transforms big data to smart data, empowering companies to achieve sharper results. Founded in 2010, Vserv has over 500 Mn unique user profiles globally, and is backed by Maverick Capital, IDG Ventures India & Epiphany Ventures.

CONTACT : EMAIL AT ankur.v@vserv.com with resume and portfolio link/attachment. Current/Expected CTC. Notice period

9.

Looking for Senior/LEad Interaction designers and UX Head for multiple Bangalore based IT product MNCs. For more info contact Padma Krishnan-padma.krishnan. hireatease@gmail.com with your current portfolio and updated CV.

Senior/ Lead UX/Interaction Designer

Exp- 6 to 8 years

Minimum of 1 year exp in Mobile UX

Strong experience in designing for consumers in web & mobile.

Good understanding of visual design required.

UX Head

Total Exp- 8 to 14 years

Ability to own & deliver client's popular mobile products' UX strategy & deliverables.

Minimum of 1 year exp in Mobile UX

Strong experience in designing for consumers in web & mobile.

Good understanding of visual design required.

Experience in managing/mentoring small teams 5 to 10 in dynamic product development environment

10.

Apply with online portfolio / pdf link to :

Nahida.Lebbos@varian.com

Sr. Interaction Designer – Pune, India

Varian Medical Systems is the world's leading manufacturer of medical devices and software for treating cancer and other medical conditions with radiotherapy, radiosurgery, proton therapy, and brachytherapy. The company supplies informatics software for managing comprehensive cancer clinics, radiotherapy centers, and medical oncology practices. We employ over 5,500 people who work at manufacturing sites in North America, Europe, and China and sales and support offices around the world.

Are you interested in partnering with customers to develop leading solutions for advancing cancer treatment? Do you want to collaborate with a talented group of peers who will inspire you every day? To increase our velocity, we're looking for a senior interaction designer to join our user experience team in our mission to provide doctors with the means of helping patients around the world to beat cancer.

Job Responsibilities:

· Design creative solutions for web, mobile, & tablet using modern design methods in a variety of product development methodologies including agile frameworks and phase-gate approaches.

Develop high level and detailed storyboards, wireframes, mock-ups, and prototypes to effectively communicate design concepts.

·Work closely with product management and engineering to understand and incorporate business and technical requirements in design strategies.

· Collaborate with UI architects and technical leads to negotiate design requirements and play an active role in design iterations.

· Partner with user researchers on user testing activities to understand design and usability issues and propose changes to solve them.

Requirements:

·5 + years of experience in interaction design with emphasis on web and mobile product design.

· Masters in Human Computer Interaction, Industrial design, Human Factors or other design-related field.

· Demonstrated experience with turning customer insight into interaction designs – portfolio required.

· Excellent knowledge of all aspects of user centered design process, methodology, and UI best practices.

· Excellent analytical ability, especially with regard to understanding user behavior and design theories.

· Advanced experience with design and prototyping tools such as Axure and Adobe CS.

·Ability to rapidly revise design concepts as needed.

· Good white boarding and co-design skills.

·Experience with Agile methodologies (Scrum, KanBan) is preferred.

·Knowledge of the software development process and ability to communicate well with software development teams.

·Great communication & presentation skills that speak to a broad range of audiences.

·A proven track record of working well with multi-disciplinary/multi-cultural teams.

· Experience working in healthcare domain with design control, regulatory practices and standards for medical devices or similar regulated industry is a plus.

11.

NIIT Technologies looking for Experienced UX designer (multiple positions) to join user experience design team. Portfolio is must for these positions while showcasing applied knowledge of Usability, User centered design process and content strategy. The document must include elements like designed screens, wireframe, site map, task flows etc. and also present strong capacity for both logical and creative thinking.
Position: User experience Analyst/Strategist (08+ Years of experience)

Desired Skills:

- **Understand and practice HCI processes thoroughly well**
- **Resilient consulting experience by articulating robust user centered design strategy for software development**
- **Can customize UX approach for projects varying from web portals, mobile app and desktop applications**
- **Have hands on experience conducting UX activities including design**
- **Design actual interactions, interfaces to convey our design approach Should be well-versed with latest design trends e.g. mobile first approach**
- **Have excellent communication skills and leadership skills Qualification:**
- **Graduate / PG Degree / Diploma in Design - Interaction Design, Visual Communication, New media design, Industrial Design or related field from any reputed institutions Roles & Responsibilities:**
- **Translate business goals into user centric design solutions**
- **Work closely with stakeholders and the cross functional teams to understand project requirements**
- **Participate in pre-sales activities such as preparing project proposals, POC's and developing collateral**
- **Prepare effort estimations and UI deliverable schedules**
- **Take ownership of entire design solution form design till final delivery and drive visual design and UI development activities**
- **Expertise in any rapid prototyping tool is essential like Axure or other Team management, project management and negotiation skills are in demand for this role**
- **Ability to leverage effectively multi-disciplinary teams to increase overall contribution Kindly send you resume/profile to Abhishek Gupta (Abhishek.1.Gupta@NIIT-Tech.com)**

Advertising:

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Forthcoming Events and Programs:

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