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Universal Mosque Design

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ABSTRACT

As a public building, mosque should not give any barrier for *Muslim* (Islamic community) to perform their religious activities. Mosque is regularly used at least five times a day for praying, and more frequent with other events. Mosque should be friendly for all. All information should be able to be understood by its *jamaah* (congregation), but in fact some people still find problems to attain it nowadays. For example, praying call that's made resound through audio instrument for sure is a problem for *Muslim* with hearing obstacle. Other problems also occur in recent mosques and these facts turn into a barrier for *Muslim* to do their religious activities. Those problems are tried to be solved through this universal mosque design.

Universal design (UD) principle was chosen based on its given possibility to explore any potential fixture to decrease or even dismiss physical barrier for its user. In this project, UD principles play its biggest rule to change common mosque architecture, while another was based on accessibility standards regulation. By understanding UD principle, the process also synthesizes common mosque activities culture with study of users' characteristic and mosque architectural program. This combination attempts to make a mosque easier to understand, regardless of the user's experience, knowledge, language skills, or current concentration level as wished by UD principle.

Keywords

Mosque; Universal Design, Local Culture, Accessibility

INTRODUCTION

Universal Design Mosque is a design concept for a mosque architecture that can be used by users with many varieties of physical conditions. This proposal is made on 2008 for Kwarasan Mosque, a community mosque in Klaten District, Central Java Province, and requested by an NGO which focuses on *diffabilities* to serve local community and also a training center for *diffable* people which is planned to be built in the same place. The reason to create a universal mosque design is not only because there are many wheelchair users, crutch users and others in training center but also because the equality of human as God's servant in a world and the mosque as one of the homes for achieving special recognition from God.

Mosque is one of Islamic architecture types that centralize Islamic religious and social activities in it. As the center of religious activities, mosque is '*Allah*'s house' where congregation conducts *shalat* (praying). *Shalat* is an essential worship in Islam done at least five times a day and cannot be abandoned unless very specific condition happens (as explained in *Al Qur'an*). Sick people, busy-working people, wheelchair or crutch users, blind or deaf people, elderly or children are not an exceptional condition which allows someone to abandon *shalat*. However, it doesn't mean that Islam cause difficulties for *Muslim* to do their praying, indeed it believes that *shalat* can be conducted in different way depends on the different specific condition, such as—as said in *Al Qur'an*— conducting

shalat by sitting for those who unable to stand, or by laying down for those who cannot leave its bed because of sick, etc.

The solution and tolerance given above are samples of how the nature of human being should be understood and facilitated. In its nature, each people are created unique and none of them are the same. How people think and solve something is different depends on their ability, capability or preferences. Based on that, Indonesia promotes the use of *'diffable'* idiom as a replacement of 'disabled' terminology. *'Diffable'* is an acronym of differently able people, and it is used to show that wheelchair users, crutch users, blind and deaf people have their own ability to solve problems, and 'as deconstruction action toward disabling process.[1]' This "*diffable*" idiom are referred not only for the wheelchair and crutch users or blind and deaf people, but also for old people, children, pregnant women, and other temporary mobility problems in it.

Another background of this project is the mosque position as public building—because of its variety of functions and users. In the building regulation in Indonesia, public building—as ruled by Act of Republic of Indonesia No.28/2002 about building, article 27 and guided by Ministerial Regulation of Public Works No.30/M/PRT/2006 about technical standard for accessibility implementation)—should be accessible for all; and as Harrison and Parker (in Christophersen [ed.], 2002) explain in their essay that *'the topic of Accessibility usually falls within the category of the technical and quantitative'. Quantitatively, as explained again by them, 'although most people want to live a long life, they have no desire to get old, with the consequent deterioration that it entails, or to become infirm or disabled, even from a glamorous skiing accident;' and technically, 'as a design generator it is not attractive and can rarely be particularly glamorous'*. Therefore, from all conditions above, universal design is seen as the best philosophy and method to analyze and create holistic solving.

PRINCIPLES

Universal design regards as building and environment philosophy is still on promoting process in Indonesia. Here, universal design is less popular than the concept of accessibility. Accessibility, based on official website of United Nation, is *'about giving equal access to everyone. Without being able to access the facilities and services found in the community, persons with disabilities will never be fully included'. The word "accessible" also implies that disabled persons can, without assistance, reach, enter, pass to and from, and make use of all facilities without being made to feel that one is an object of charity* (Ikaputra and etc, 2001). While, universal design means that the products which designers design are universally accommodating, that they cater conveniently for all their users (Goldsmith, 2000).

The way to create universal design is guided by principles that already formulated by The Center for Universal Design, NC State University (1997). In its formulation, seven principles and supporting guidelines are called 'The Principles of Universal Design'. It defines universal design as 'the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design', and explains seven principles below as its guidance:

1. Equitable Use (The design is useful and marketable to people with diverse abilities)
2. Flexibility in Use (The design accommodates a wide range of individual preferences and abilities)
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)
4. Perceptible Information (The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities)
5. Tolerance for Error (The design minimizes hazards and the adverse consequences of accidental or unintended actions)
6. Low Physical Effort (The design can be used efficiently and comfortably and with a minimum of fatigue)

[1] http://driamanunggal.org/ , accessed at May 30, 2010

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)

An interesting note that compliments these principles explanation on the UD definition said that designers not only involves consideration for usability but must also incorporate other considerations such as economic, engineering, cultural, gender, and environmental concerns in their design processes. It means that UD can bring the form of the locality and by its logic and simplicity it can be shared universally.

METHOD

A suitable method for implementing universal design philosophy is bottom-up route method. As Goldsmith (2000) said that: '*The architect who takes the bottom-up route to universal design works on the premise that the building users he or she is serving, including those with disabilities, are all people who can be treated as normal people. The architect does not start with the presumption that people with disabilities are abnormal, are peculiar and different, and that, in order to make buildings accessible to them, they should be packaged together and then, with a set of special-for-the-disabled accessibility standards, have their requirements presented in top-down mode as add-ons to unspecified normal provision.'* With this bottom-up route, the mosque design starts on basic knowledge about building program, mosque and users characteristic and accessibility standard, and finally continued with analyzing the data and designing. The process itself consists of:

1. understanding mosque program
2. understanding *diffabilities* characters
3. exploring users' habit in mosque, mosque as the universal or local symbol, and language
4. analyzing all data above and transforming to design concept

The first until third process are explained below:

1. Mosque program

   Basically, mosque program is simple. The main program only consists of one big prayer room, small room for *imam* (leader of prayer) and a place for *khatib* (preacher's podium). These components in many cases are put into one big prayer room without any division. In this simple program, variant activities are usually held, such as praying as its main activities, *Al Qur'an* study session in the afternoon for children, adult and old people do their group or organization meeting and also learn *Al Qur'an* in the evening or Sunday morning. While supporting functions consist of places for men and women's *wudhu* (ablution) and also lavatories. However, in its development, modern mosque buildings nowadays add other functions, such as multipurpose room, bank, playgroup, book store, etc.

2. *Diffabilities* characters

   The principles of universal design put an understanding of users' characters as basic information needed, and because of its specific characteristic, *diffabilities* group is used as benchmark. Since this terminology is used to replace disability terminology, therefore several groups with walking aided tool automatically included in this field, and other certain physical conditions are included also. Thomson, etc (1984) describes five major groups that belong to disability group which need several basic design requirements, which are:

   a. wheelchair users
   b. ambulant disabled
   c. deaf and hard of hearing
   d. visually handicapped
   e. mentally handicapped

   While Harrison and Parker (in Christophersen [ed.], 2002) add others in the list of minority users of a built environment, such as:

   f. persons with cognitive disabilities
   g. persons with multiple disabilities and

h. elderly citizens

Finally by seeing the similarity of physical characters, we can put children in the last list of member of *diffabilities* group. The complete list and its characteristics are described as follows:

Table 1. Diffabilities characteristics *(*Source: modified from Thomson, etc, 1984)

No	Diffabilities Groups	Definition	Handicapped by being:
1	Wheelchair users	Disabled person who depends on a wheelchair for mobility	- at a lower level than everyone else - wider than everyone else - able to go only where wheels can take him
2	Ambulant disabled	Disabled people who are able to walk but who may depend on prostheses (artificial limbs), orthoses (calipers), sticks, crutches or walking aids; and also include people who have some physical disability which affects their mobility or use of a building but do not rely on aids of any kind.	-
3	Visually handicapped	-	-
4	Deaf and hard of hearing	Deafness is one of the most isolating disabilities. The effects of deafness are subtle and far-reaching, the most important being the inability to communicate via the spoken word.	-
5	Elderly citizens		-
6	Children, dwarf		- at a lower level than everyone else

3. Exploration of common mosque activities culture

Exploration is important to fuse universal design philosophy and upgrade accessibility standard into this universal mosque design project. At this step, we try to formulate several basis data that made this architecture specific but at the same time is easy to understand by the users. *First*, we observe the mobility pattern that usually happens in a mosque. Observation result, as illustrated by figure 1, said that there are three mobility patterns usually occur in a mosque. First pattern shows that user that already has *wudhu* will directly approach praying room. Second, user comes and goes to *wudhu* place for *wudhu* and after that to the praying room. Third, user goes to toilet first before approaching *wudhu* place and praying room.

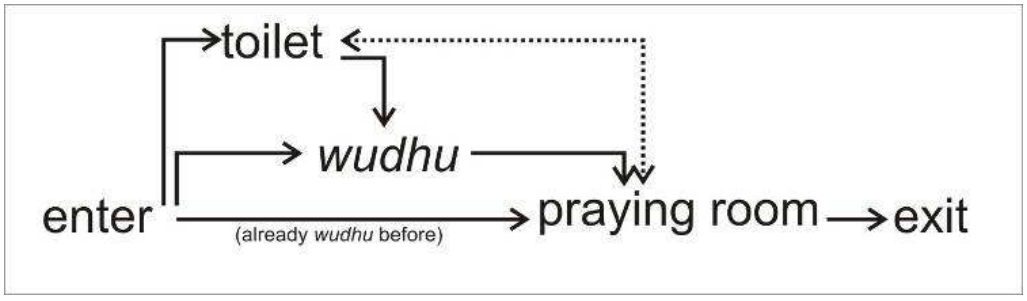

Figure 1. Mobility pattern in a mosque

Second, it is found that several mosques use additional tools to inform praying times. Praying schedule board is a common instrument found in a mosque interior. It consists of five clocks point at each praying times, while another type is completed with a running real time watch (see figure 2). Another unique instrument found in the mosque is lamps, which usually only has one lamp (red lamp) or two lamps (green and red lamps). It works similarly like traffic light. In figure 2 (right picture) for example, it uses two colored-lamps (green and red). The red lamp informs that praying will start immediately, while the green one informs that there is still much time before praying is started. The lamps will be switched on after the praying call (*adzan*) and switched off right before the praying is started.

Third, the common architectural languages for mosque design in Indonesia is characterized in its roof type, which usually rooted on tropical architecture (pyramid roof type) or Islamic architecture (onion dome or dome type), and a minaret.

Figure 2. Praying Schedule Board (left) and Colored Lamp Signal (right)

THE FEATURES OF UNIVERSAL MOSQUE DESIGN

Design is a problem solving, and solving a problem requires analysis and syntheses of the collected data. From the data above, there are several design aspects that can be developed and utilized.

Figure 3. The Kwarasan 'Universal Mosque Design'

1. Accessibility need

Information collected from *diffabilities* characters study is developed to built basic accessible design requirement (see table 2); while the detail such as guiding block/warning block installation, degree of slope of ramp, height of stair and railing, size of accessible lavatory, etc are based on implementation guidance on Ministerial Regulation of Public Works No.30/M/PRT/2006.

Table 2. Basic Accessible Design Requirements (Source: Modified form Thomson, etc, 1984)

	Group	**Accessibility Needed/basic accessibel design requirements**
1	Deaf and hard of hearing	• guidance information in entrance • signage (*sholat*/praying, *khotbah*/speech, *azan*/praying call) in mosque's tower (with color), in *wudhu*, in bathroom • implementing OHP working principle as *khutbah*'s display • emergency bell in bathroom • clear and consistent and full signposting, labelling and display of information
2	Blind person	• tactile map in entrance • guiding block for reaching steps or ramp • railling • braille plat in railling
3	Ambulant disabled	• access bath room • access *wudhu* room • accessible parking place • accessible praying room • railling • space requirements in circulation areas and door widths • alternative provision will be necessary, such as steps as well as ramps and narrower wc cubicles

4	Elder person	• access bath room • access *wudhu* room complemented with bench • railing
5	Children	• access bathroom • access *wudhu* room complemented with lower water fixtures
6	Wheelchair users	• all kinds of fittings, controls and equipment need to be places within a narrow range of reach • the minimum width and space requirements • changes in level must be negotiated by means of ramps or lift • floor surfaces should be smooth and hard

2. Comprehensive Circulation

Comprehensive circulation is important to decide how the programs will work and how the form will look like. It also unites an accessibility requirement as a whole design problem solving, not as an additional instrument. Another positive point is it will be the universal design features promised to be used by wider possible users at the same time.

From the observed mobility pattern, there are two circulation paths made in the design. First, user will approach praying space directly through the stairs (the use of stairs is because of the concept of form) and second path will bring users from outside to the entrance, *wudhu* place and praying space as a continued procession through the ramp.

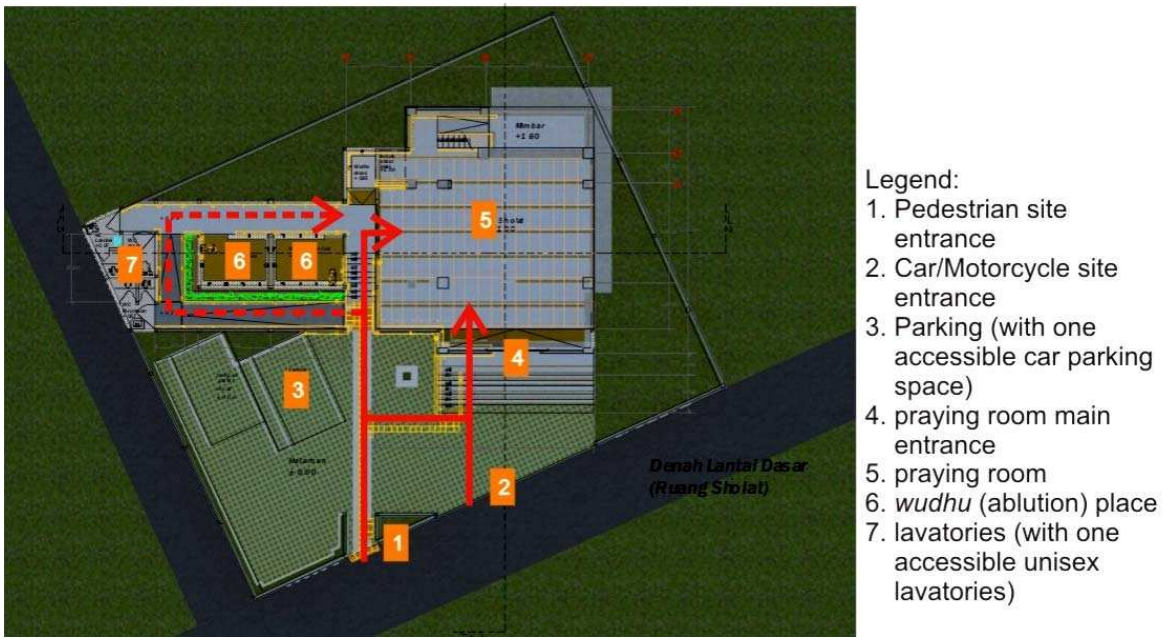

Figure 4. Site Plan of the Mosque & its Comprehensive Circulation

3. Praying time reminder

Praying should be done when the time has come. For informing this to as much as possible prayer, the project implements variation of instrument, such as praying schedule clocks, colored lamps signal and of course the sound of *adzan* (praying call). *Adzan* is the formal way to inform the praying time, but for some groups and conditions such as for the deaf people, old persons, persons hearing music with earphone, etc the call won't be working well. Therefore, we promote to rescale two information instruments that found in observation into a grand scale instrument namely colored lamps signal and time schedule clocks.

Colored lamps signal in the design is rescaled by putting it on top of tower of the mosque. Similar as lighthouse, by putting it on top of the tower we hope people will easily see it from a far, and even they do not or cannot hear the *adzan*, they will know that the praying time has come. The colored lamps will change its color according to the information—similar to traffic light—

and can be seen as an aesthetic part of the mosque architecture. In this design, we propose three lamps: green for the *adzan*, yellow for the time between *adzan* and praying, and red for praying time. While bigger praying schedule clocks are installed in the exterior of the mosque. In this case, we put the clocks in the fence wall with a purpose that passerby will be able to see it. For each, we use clocks with 50 centimeters in its diameter (see figure 5). In another design, it can be installed in the minaret or other parts.

Figure 5. The Use of Lamp (green, yellow, red) and clocks as praying time information instrument

4. *Khutbah* (sermon) display

This is the new propose instrument for giving alternative method in transferring the content of *kuthbah* (sermon) to *jemaah* (congregation). In usual activity on mostly mosques, *khotib* (preacher) is delivering the sermon while reading his note. We notice that this fact can be developed by promoting the Overhead Projector (OHP) system. Differ from LCD projector which needs high technology, OHP does not require *khotib* to make Power Point slides and will not change *khotib's* habit; but at the same time will make people with hearing problem understood the speech content. As usual, the *khotib* just places his note—that printed/copied in transparency plastic—onto the OHP and read it, while at the same time projector will enlarge the note onto the wall for audience to view. Elders, deaf people, and people with hearing problem will understand the content of the sermon.

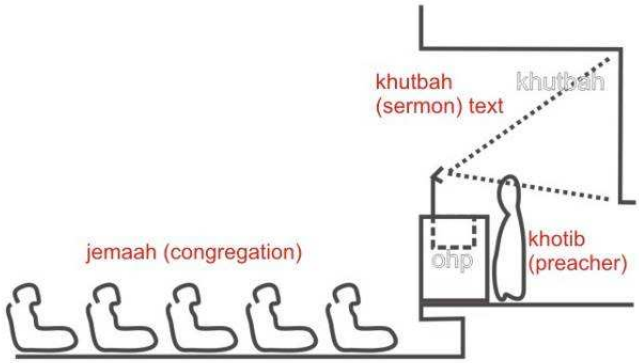

Figure 6. Diagram of *Khutbah* (sermon) Display Concept

These proposed features could be filled in into universal design principles as below:

Table 3. Proposed Features on Universal Design Principles

	Universal Design Principles						
	Equitable Use	Flexibility in Use	Simple and	Perceptible Information	Tolerance for Error	Low Physical	Size and Space for

				Intuitive Use			Effort	Approach and Use
Universal Mosque design features	Accessibility needed		☑			☑	☑	☑
	Comprehensive Circulation	☑	☑				☑	☑
	Praying Time Reminder	☑		☑	☑			
	Khutbah (sermon) display	☑	☑			☑	☑	

CONCLUSION

The Universal Mosque Design project is a lesson learned in creating an architecture that is friendly for all. The word friendly here comes from how accessibility standards and common langguage of activites in mosque make the mosque design familiar to the user and/or even universally design.

This project proposes four design concepts namely accessibility need, comprehensive circulation, praying time reminder, and *khutbah* (sermon) display. Accessibility need presents basic standard for accessibility element and measurement, comprehensive circulation provides several alternatives on using the architecture program, praying time reminder gives many people an equal chance to receive information, and *khutbah* (sermon) display makes people equal in receiving the content. The form of the mosque in universal mosque design is not the main point but the creativity in blending these features into the form/design will bring the form (design) is universally used.

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Other Universal Mosque Designs: Almanar Mosque, Palembang City-South Sumatera Province (design: 2009, status: on fundraising process)


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