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# The Effect of Universal Design of Campus Facilities for Person with Disabilities
## (Case Study: Universitas Mercu Buana, Jakarta and University of Daegu, South Korea)

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***Abstract*** *– Interiority is not just the science of interior design that meets the needs of function and aesthetics alone. Both of these are indeed the main 'task' in interior design. Each building is design and built to fulfill certain functions. Hotels, apartments, and houses for example, serves as a means of accommodation. Restaurant serves as a commercial building that meets the needs of food. A public building should be accessible and used by a variety of different needs. These buildings must be accessible to those who can see or not (blinds), walkers and wheelchair users, and those who are able to listen or not (deaf/hard of hearing). This paper is study of application of universal design that is accessible of campus buildings that function as container of Tri Dharma of Higher Education activity. The case studies taken in this research are Universitas Mercu Buana in West Jakarta and University of Daegu in South Korea. The study was conducted by studying the universal design of the two universities by considering two parameters, namely universal design and usability, by conducting literature studies and user interviews. From the results of the study it is found that universities in Daegu have made universal design and usability factors an important part of design, while Universitas Mercu Buana in West Jakarta hasn't yet fully made these two factors as part of the design, with many facilities not being able to accessed and used universally well.*

***Keywords:*** *accessibility; universal design; architecture of campus; usability; person with disabilities*

## INTRODUCTION

Space facilities of University with universal design approach and partial reusability haven't become commonly applied in Indonesia. Design of the existing university spaces but hasn't yet been applied to universal design taking into account the needs of the reusable parties.

The function of a university, which is a place of learning for higher education, shows that are university open to all, including persons with disabilities. In other words, the university can also be categorized as a space for the public with various backgrounds. For that reason, it is natural for an university to provide various facilities that can be accessed and used by all users. An university isn't only accessed by students as learners, and lecturers as teachers. But it can be accessed by any user who has physical limitations. For this reason, an university is naturally design to be accessible and used by every different need (universal design). Thus, university can perform its role as a container that is open to every circle.

However, in reality it isn't so. There are still many universities that can't be accessed universally, as well as many facilities that cannot be used by those who have different needs. Access that is not available to wheelchair users, the blind, deaf, elderly, and other special needs, as well as facilities that can't be used because they aren't universally design, are still visible at universities.

This study aims to review of university's alignments in those who have different needs from design side. In this study, a sample of the campus in the country, Universitas Mercu Buana located in West Jakarta and the overseas university, Daegu University located in Daegu.

## LITERATURE REVIEW

In process of interior design, naturally us provide accessible facilities and are useabled by everyone with different needs. This is important because everyone has the same rights in accessing the public space. In this context, there are two commonly used terms, namely universal design and inclusive design. Nussbaumer (2011). stated "there are some similarities and

differences between the two. Most universal designs are used in the United States and inclusive designs are used in Europe, Canada, and other countries ". However, the two differences are not only in their use, but also in their meaning. Where Nussbaumer explains that, some researchers believe that inclusive design is a more appropriate term than universal design. Universal design and inclusive design have similarities and differences. For example, "universal" means relating to the world as a whole and something (the product, the equipment, the environment) used by everyone. "Inclusive" means covering many things, but more situational (such as the design of hearing aids or hearing impairments that allow others to get involved.

Apart from these two terms, universal design becomes important for both. According to Nussbaumer, universal design concerns everyone, therefore, design can be accessible to everyone.

Accessibility takes care of everyone around the world. Furthermore, Nussbaumer said that, "in 1961, The American National Standards Institute (ANSI) providing of guidance to ensure people with disabilities to be able to access and move on public buildings. In 1968, Congress issued The Architectural Barriers Act (ABA) of 1968, the first accessibility regulation, which requires buildings and facilities to be designed, built or converted with federal government funds by federal agencies should be accessible. Meanwhile, Steinfeld and Maisel (2012) describe the field of universal design represents multiple red-thread conferences in practical design with a focus on usability or benefits. From the above theoretical review it can be concluded that, every public space must provide an inclusive design in order to accommodate different needs because everyone has the same human rights.

## METHODS

The study was conducted with qualitative description and observation of direct surveys in the field of two different universities in Indonesia and Daegu (South Korea). Observations were make using two parameters, namely universal design and usability. In addition to observing, a study of several relevant theories is also used as well as interviews with users, especially at Universitas Mercu Buana in West Jakarta.

## RESULTS and DISCUSSION

### a. Universitas Mercu Buana in Jakarta

The campus of Universitas Mercu Buana is located in West Jakarta with Accreditation A status with the following locations: building area: 38,480.84 m2, land area: 60,710.25 m2, green open area: 24,284.1 m2 and parking area: 15,185, 6 m. From result of analysis at location of site, zoning laying of building mass on east side which is facing the UMB is the main lobby of the 7th floor of Tower Building with consideration of its location directly opposite the main gate. While the north and south side of building lectures and rectorate average has four floors, then vertical access becomes a problem that must be resolved. This is important in order to accommodate everyone with different abilities.

However, the problem that arises is, access of vertical circulation by using the staircase is only found in the old building of Building A, B, C, D and E also Multipurpose building and Tower building is quite accessible. This gives the wheelchair, blind, hearing impaired, or people with different needs like elderly, and pregnant women, who will access the second floor, third floor and four lecture buildings (A, B, C, D, E) and Multipurpose building. Tower building and use of elevator to access to old building but not connected with bridge, but distance from Tower building and lecture space and multipurpose building which reaches about 200 meters, will be quite difficult and time consuming.

Although in Tower building is a ramp from drop off to main entrance lobby on ground floor is located right and quite difficult to be accessed by wheelchair users because ramp too high. While other alternatives are through basement floors circulation paths are very difficult for users of

wheelchair, blind, deaf and other need not meet the standards of universal design principles. Guest parking area at tower building and multipurpose space aren't available for special car park with PwDs.

With regard to access problems, in addition to lack of optimal universal design for all users in accessing various buildings and lecture rooms on UMB campus, access for the blind isn't available guiding block or map and doesn't become part of campus design process whereas deaf access is also totally no signage or marker available, way finding and orientation from exterior to interior difficult to access. The only information available to blind is braille button located on elevator / elevator. This isn't part of campus design, but facilities that have been provided by elevator manufacturers are used.

Being in building, there are many facilities that can't be used by wheelchair users, blind, deaf or anyone with different needs such as excessive sinks, hard-to-reach library shelves, difficult toilets or tables hard to use by students with left-handedness and canteen difficult to walk on corridor path. Observations and interviews show that UMB campus isn't designed with consideration of different needs or universal design. This is seen by lack of access available to all users, as well as number of facilities that can't or difficult to use by those with different needs.


Figure 1. The Interior room of the Tower building there are several classrooms of lectures, lobby, libraries and toilets not meeting standard of universal design principles.
Source: MGS UMB.
Photo source: Rachmita MH, 2017

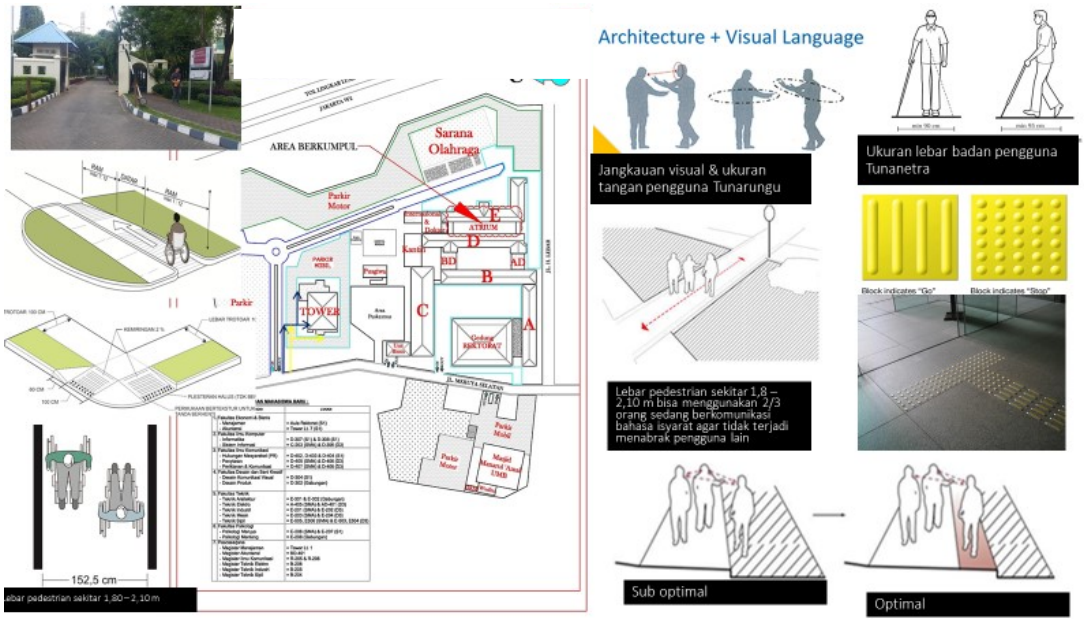



Figure 2. Pedestrian path to entrance of Tower Building is not available for specific specifications of wheelchair users, visually impaired, deaf and other different needs. Proposed designs as specified in examples of detailed wheelchair user size for pedestrian lanes, guiding lane drawings block for the blind user while the deaf detail image runs 3 people when communicating use gestures because they can't hear the wide width according to the size of wheelchairs user about 1.6 m - 2.00 m. Proposed design example image above.
Source: MGS UMB, wheelchair detail picture and user of blind crew: Regulation of PUPR No 14/2017, detail image Deaf: Hansen Bauman, 2010.
Photo source: Rachmita MH, 2017

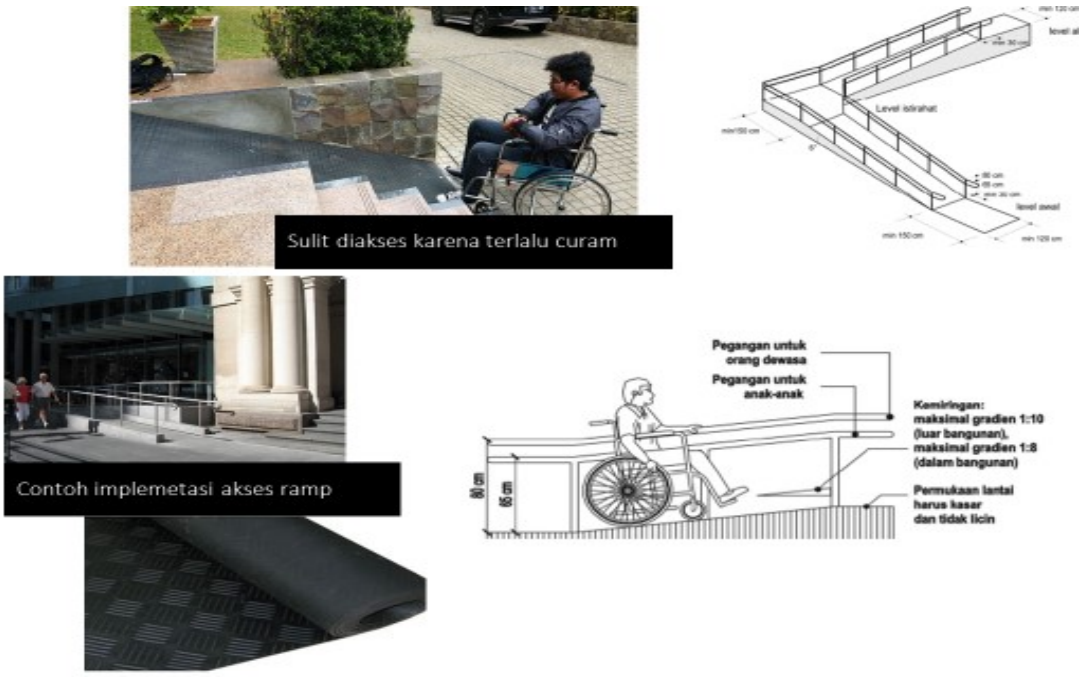



Figure 3. Ramp drop off to lobby at Tower building doesn't meet the universal design principle standards because ramp is too high will be difficult to access by wheelchair users. The proposed design on the detail picture is ramp and the material is not slippery.
Source: wheel detail by Regulation of PUPR No. 14/2017.
Photo source: Rachmita MH, 2017

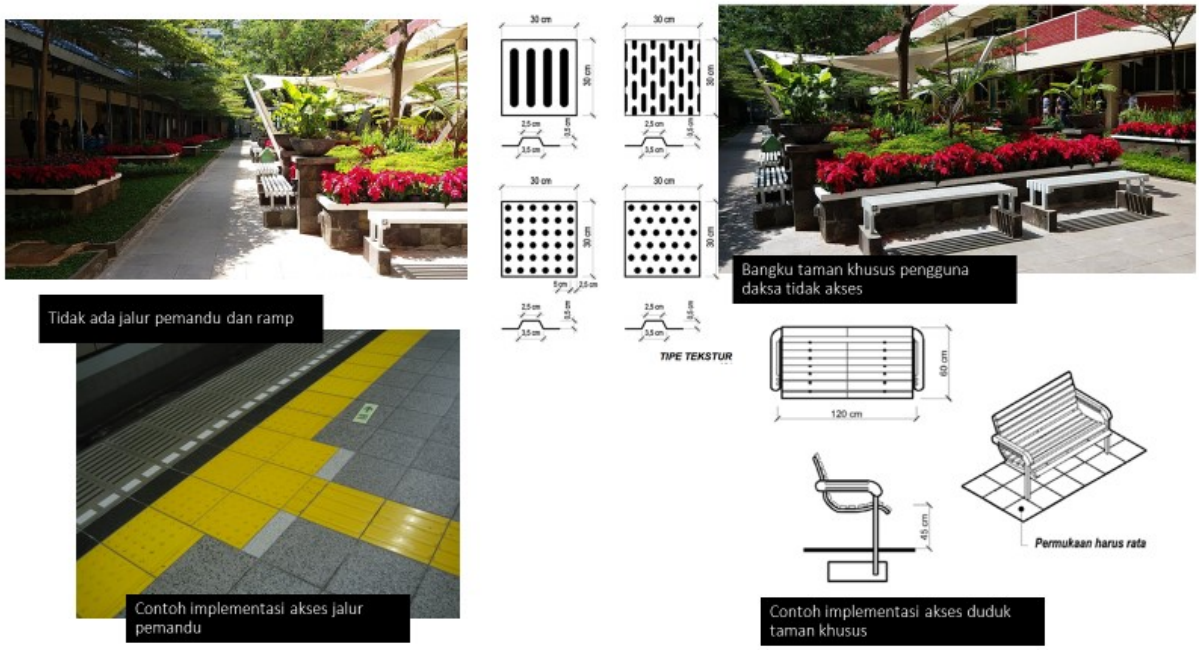



Figure 4. A special pedestrian path for blind men from Tower to Lecture building (old) is not available guiding block with guiding block material. Proposed design example image above.
Source: detail guiding blocks and lawn chairs by Regulation of PUPR No. 14/2017.
Photo source: Rachmita MH, 2017


Figure 5. Access way finding and vertical connectivity from Tower building to lecture building is optimal for deaf users. Proposed design example image above.
Source: detail vertical connectivity by Hansel Bauman, 2010.
Photo source: Rachmita MH, 2017

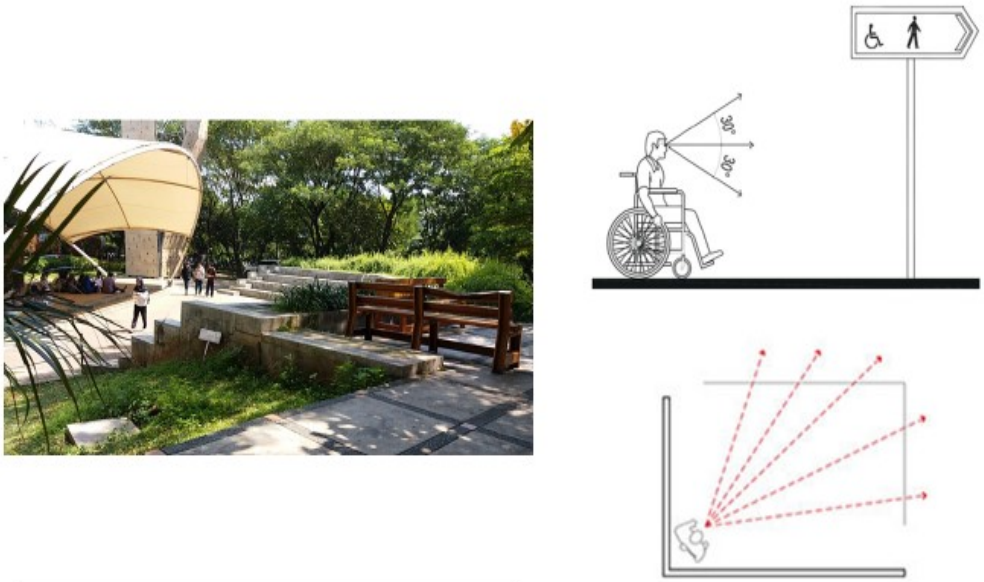



Figure 6. Visible circulation path from the canteen to the basement floor Tower building isn't access it is difficult to way finding and orientation for blind and deaf. Proposed designs on detailed images of visual distance range and guide track.
Source: detail of visual distance spacing hint by Hansel Bauman, 2010.
Photo source: Rachmita MH, 2017


Figure 7. Access to toilets at the Tower building isn't in accordance with universal design principles specifications are difficult to spin for wheelchair users. The proposed design on detail picture of size of toilet.
Source: toilet by regulation of PUPR No. 14/2017.
Photo source: Rachmita MH, 2017

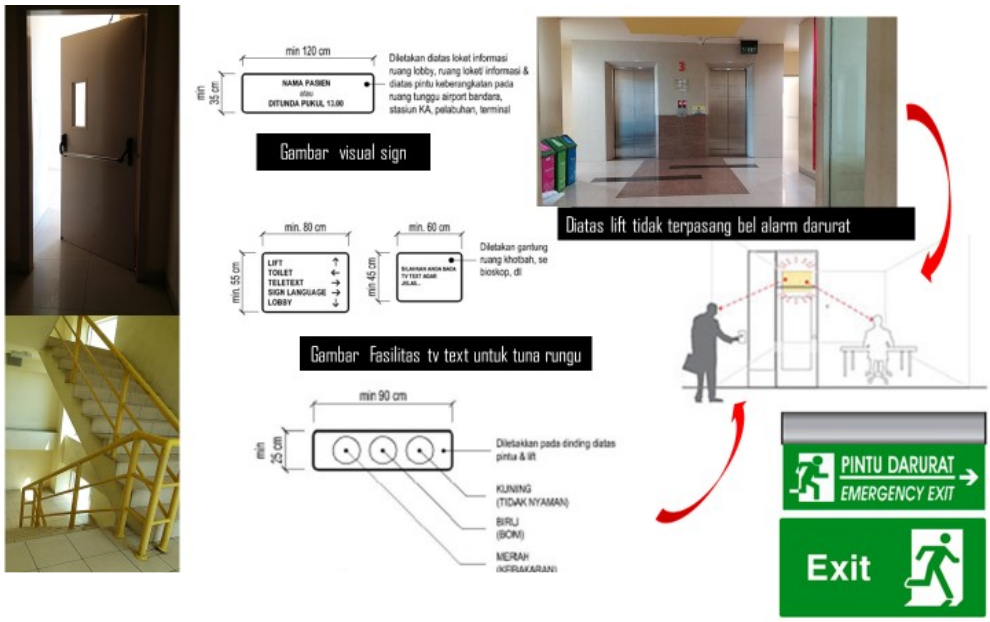



Figure 8. Access of evacuation system and emergency staircase leading up to the door at Tower building and instruction board isn't provided. The proposed design on the detail picture of the size of the toilet.
Source: toilet by regulation of PUPR No. 14/2017.
Photo source: Rachmita MH, 2017

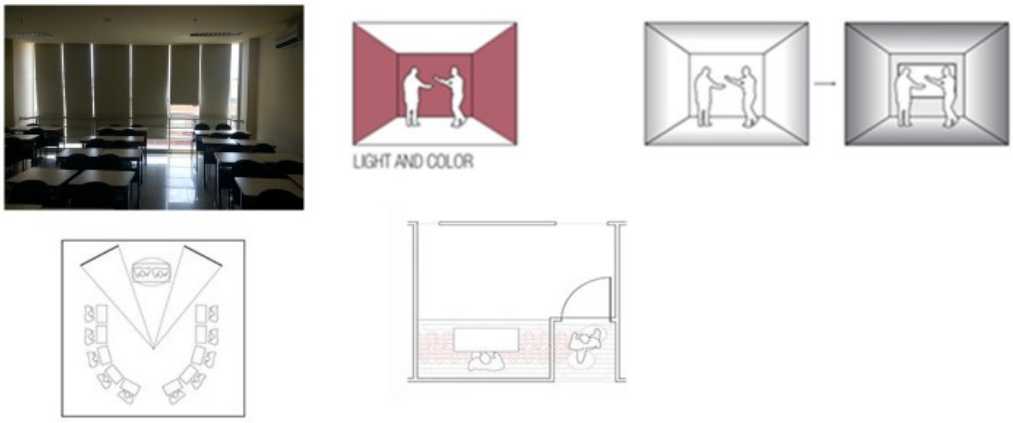



Figure 9. Access table and student seating settings especially deaf and lighting users don't meet standard deaf space guidelines while the wall color is optimal. The proposed design on detail picture of a horseshoe-shaped table setting or the U-letter and proposed lighting is bright and not dazzling.
Source: table and chair settings and lighting and color by Hansel Bauman, 2010.
Photo source: Rachmita MH, 2017

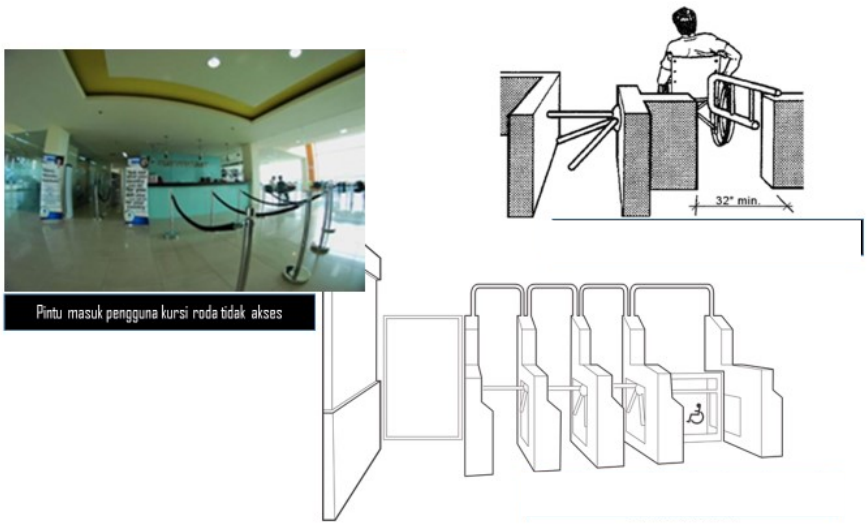



Figure 10. Access to reading room entrance of Tower building is difficult to access by wheel users. The proposed design on the detailed picture detailing the size of wheelchair.
Source: entrance of counter by regulation of PUPR No. 14/2017.
Photo source: Rachmita MH, 2017

**b. University of Daegu, South Korea**

Unlike the UMB campus, University Daegu has shown a preference for people with disabilities. This is seen since of entrance to campus. At Daegu University, when entering the campus environment from front gate, immediately visible guiding block which is path for blind. This line connects all the buildings and facilities that exist in the campus environment. In addition to guiding block, visible also map for blind who contains information about entire building in campus environment in braille. The existence of map in front of the campus provides information for those who don't have visual ability to know information of existence of building that they are going to go.

Table of analysis at Daegu University.

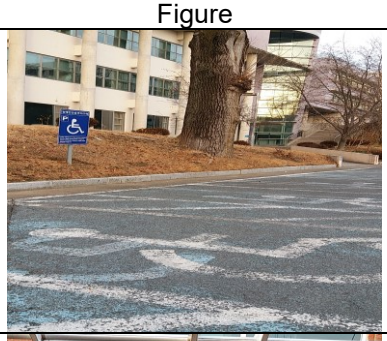
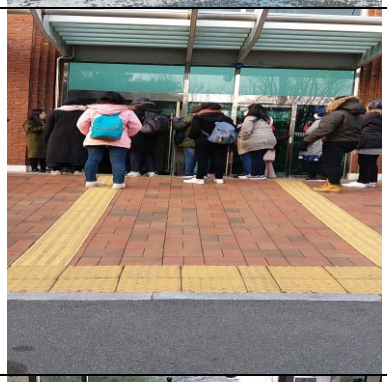
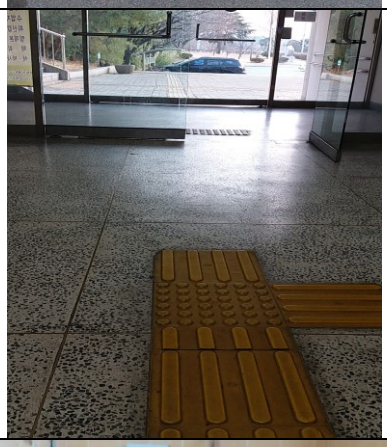
| Figure | Analysis Description |
|---|---|
|  | Figure 11. Visible signboards with disability logo and drop off as well as University of Daegu special car park area are provided to meet universal design principles of province. |
|  | Figure 12. Access of guiding block lane to entrance lobby at University of Daegu lecture space as a guide and information provider for the blind. |
|  | Figure 13. Accessible access points for the blind can connect all facilities including elevators and stairs intended for those who do not have the ability to access visually, placed in front of Daegu University campus. |
|   | Figure 14. Access to the toilet is available on the board for easy access to deaf or all users. The size of the toilet area can be rotated and features key information for all users including wheelchairs. |

Photo source: Rachmita MH, 2018

Guiding blocks or guiding blocks provided on the campus area look well prepared in the design process. This is not only visible from the arrangement of the path, but also on the contextual color selection with the concept of color of the circulation area. The guiding line is yellow. In addition to contextual, the color selection also indicates that no preferential treatment distinguishes the users of the guiding line with other line users, all of which are made equal and universal.

The presence of the guiding line looks designed with careful design considerations, all the facilities on the campus area are well connected, including access to the office, elevators and stairs. On the stairs, the handrail is designed to be easy for all users to use.

The campus is not much different from the Daegu University campus in providing universal design for different needs, even providing handrails on various circulation paths, and not just on vertical circles like ramps and stairs.

## CONCLUSION

From the above discussion, it can be concluded that, every public space is required to provide universal design for all users including persons with disabilities, because everyone has the same rights. Meanwhile, field observations and interviews on some UMB students with wheelchair and deafness are found that UMB campus has not been accessible and usable because some facilities and buildings can't or can't be accessed.

While direct observations on the Daegu University campus shows that the campus has considered accessibility and reusability in its design process. This is evident from the various facilities provided functionally and contextually with the overall design.

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