The Aspects of Universal Design in Interior Designing

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ABSTRACT

Many studies show the findings of public facilities' cases still inaccessible to people with disabilities and see the importance of a design, especially in the interior sector, that can produce a built environment that is user-friendly and barrier-free. Accessibility rights for persons with disabilities have been regulated in various regulations ranging from regulations in the central government in the form of laws, government regulations to the minister of public works and regional regulations. There is a regulation of the minister of public works and public housing of the Republic of Indonesia No.14 2017, which regulates the provision of facilities in buildings and environments according to the needs of all age groups and conditions of physical, mental, and intellectual limitations, or sensory-based on the function of the building to make it easier for users and visitors in their activities in public buildings. However, this guideline has not been discussed in detail. This research is intended to review universal design standards in the interior design process, especially in public buildings.

1. Introduction.

Some cases indicate that facilities in public buildings cannot be accessed by all users, one of which is the facilitated ramps for visitors with disabilities. This shows the importance of design, especially in the interior sector. Accessibility rights for persons with disabilities have been regulated in various regulations ranging from regulations in the central government in the form of laws, government regulations to the minister of public works and regional regulations. However, there are no regulations that specifically contain guidelines on accessibility in open spaces (Lau, Gou, and Liu 2014). With a Universal Design designer, a person's independence will arise automatically in thinking and doing activities following their wants and needs without relying on others and providing maximum benefit for themselves.

The Universal Design Principles were developed in 1997 by a working group of architects, product designers, engineers, and environmental design researchers, led by Ronald Mace from North Carolina State University (John Clarkson and Coleman 2015). The purpose of this principle is to guide environmental, product, and communication designs. According to the Center for Universal Design at NCSU, universal design principles can be applied to evaluate existing designs, guide the design process and educate designers and consumers about more valuable and environmental product characteristics (Iwarsson and Ståhl 2003). The main principles of universal designs may include: everyone uses, flexibility in use, simple and easy-to-use design, adequate information, fault tolerance, low physical effort, size, and space for approach and use (Story 1998).

Inadequate awareness of the importance of a universal environment without physical, gender, and age limitations for all people cause the policies related to the construction of public facilities do not explicitly support the concept of universal design (Afacan and Demirkan 2011). On the other hand, many people with disabilities have abilities equivalent to normal humans. However, they are hindered by external environmental conditions that are difficult to access because they are not under their special abilities (Lombardi and Murray 2011). Therefore, the author will review universal design in interior

designs by limiting the study of journals reviewed in the last five years, between 2015 and 2020, including books that discuss Universal Design material and government regulations used in Indonesia.

2. Method

This research employed a literature study method, collecting information and data with various existing materials to collect, process, and conclude data using certain methods/techniques to find answers to the problems at hand (Small 2011). To collect data directly related to research, several sources are needed, including journal articles about Universal Design spanning 2015 to 2020, Government Regulations in Indonesia, and books about Design (Persson et al. 2015; Black, Weinberg, and Brodwin 2015; Katz 2015). Referring to several articles evaluating universal design standards (Ongel et al. 2018; Al Hazmi and Ahmad 2018; L. A. Scott and Bruno 2018; Westine et al. 2019; Kieran and Anderson 2019; Rose et al. 2018; Capp 2020), it can be concluded that it is necessary to consider universal design criteria in designing the building and interior which becomes the research discussion.

3. Results and Discussion

Ronald L. Mace, a designer, academician, and architect, coined the term 'Universal Design in the 1970s and formalized the concept through the establishment of the Center for Universal Design in 1989; the main emphasis of this movement was to eliminate discrimination and inequality between those with and those without disabilities (including children and older generations) when accessing and using living space and products (Mace 1998). The concept of universal design is the idea of a design in an environment that is accessible to all people from various backgrounds, with different abilities and characters (Cleveland and Fisher 2014). The public space is obliged to provide an inclusive design to accommodate a variety of different needs, as everyone has the same human rights (Mosca et al. 2018). The concept of universal design brings a new paradigm in solving the problem: considering human diversity draws a standard that applies equally to all (Torkildsby 2017).

The Disability and International Development Consortium, in its statement on CRPD Article 9 Accessibility 10, notes that people with disabilities or groups of people with disabilities are largely ignored in general development policies and programs. Community accessibility that is still being neglected, including physical and environmental accessibility, accessibility for means of communication, intellectual accessibility by providing reading or speaking access for a group of people with special needs, social accessibility, and attitudes in seeing people's behavior towards people with special needs, accessibility of one's social and economic rights.

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a) Equitable Use. A design should be usable by various groups of society.

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Fig. 1. Floor Infrastructure with the Guides for Visitors (Zhafira and Abdulhadi 2019)

- The designs must be facilitating the same means used for all groups.

- The designs must not put forward a specific group.

- The designs require security, safety, and privacy for all users.

- The designs should be attractive for all visitors.

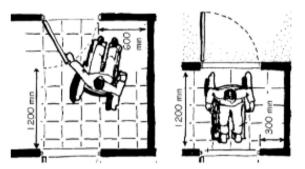b)   Flexibility in Use. A design must be usable by users with various individual capabilities.

Fig. 2. An example of door design can be used in various ways (Sukamto and Hetyorini 2013)

- The designs must be user-friendly, usable in more than one condition.

- The design can accommodate both left-handed and right-handed users.

- The design must have flexibility, even for the users with some unconventional or unpredictable ways.

c)   Simple and Intuitive Use. This means that the design is easy, understandable, and reviewed in terms of user experience and capabilities.
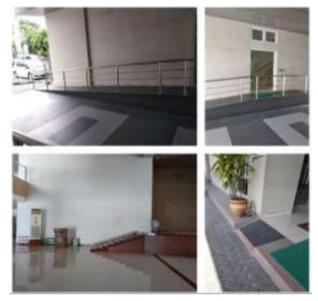
Fig. 3. The Designs of Stairs, Ramps, and Railing in the Case of Different Floor Elevations at Aisyiyah University Campus (UNISA) (Pujianti, Munandar, and Surakusumah 2018)

- The designs can be easily understood

- The designs must adapt to all users' capabilities.

- The designs provide various unique fonts and language skills.

- Important information is placed in strategic places

- There is an evaluation after the design is established.

d) Perceptible Information, which means that a product or place must be equipped with supporting information vital for the users by adjusting users' capabilities.
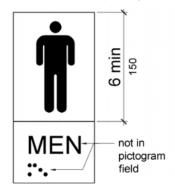

Fig. 4. An example of information for different types of visitors (Tarun and Tomczak 2010)

- The use of different types of markings (images, text, textures) must contain clear information.

- Contrasting colors are used to distinguish important information from its surroundings.

- Important information is easy to read, understand and provides clear instructions quickly according to users' various abilities.

- Provide various forms of important information that can be used and understood to make it easier for users with sensory disabilities.

e) Tolerance for Error means minimizing errors and dangers that can be detrimental.

Fig. 5. A Design Example of Direction Sign (Valentine 2017)

- Arranging the elements to reduce hazards and errors.

- Facilitating safe and precise hazard warning information.

- Providing safe alert information when a feature fails.

- Anticipating the loss of awareness in every situation.

f) Low Physical Effort. A design must be able to be used comfortably and efficiently and can reduce the occurrence of accidents.

Fig. 6. Some examples of table and chair designs can be used by various users (Valentine 2017)

- The design can be used in a normal body position.

- The design must accommodate unusual ways.

- The design can be used in one movement without repetition and is not difficult to use.

g) Size and Space for Approach and Use. The space's size should consider approaches to the users' size, posture, and movement.
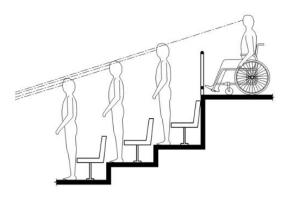
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Fig. 7. The line of sight between the heads of the audience standing and sitting (Tarun and Tomczak 2010)

- Providing precise forms and boundaries of each design.
- Creating comfortable shapes for the users both standing and sitting.
- Providing various hand sizes and grip sizes.
- Paying attention to minimum needs by adjusting room standards.

4. Conclusion

In general, the universal design principles in the Regulation of Ministry of Public Works and Housing of Indonesia No.14/PRT/M/2017 concerning the Requirements for the Ease of Building Constructions must be considering the needs and abilities of persons with disabilities, children, older people, and pregnant women including the equality of the space use, the safety and security for all, the easy access without barriers, the easy access to information, the independent use of space, the efficiency of users efforts, and the suitability of size and space ergonomically.

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