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Universal Design is “not only” a Design for People with Disabilities

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Abstract

Universal design is an approach that aims to create products, buildings, environments and services that are inclusive and accessible to everyone, regardless of age, gender or physical ability. In its development, universal design has been widely used in planning and architectural design. This research aims to discover how the development of the universal design paradigm from its inception identifies the pros and cons of applying universal design. This research hopes to explain the correct position of universal design for architects and policymakers so that there is an increase in the quality realization of accessibility/elements of universal design that is improving. The method used in this study is to examine various sources of journal articles that are relevant to universal design theory. Through a comprehensive literature analysis, the results of this study found that the origin of universal design stemmed from the development of the concept of barriers, which changed the perception of exclusivity to inclusivity. In addition, several benefits of implementing universal design are known in the form of long-term investment, economic value, and support for sustainable design.

Keywords: *Architecture; Barrier-Free; Disabled; Paradigm; Universal Design*

Introduction

Universal Design Perception

Universal design is an approach that emphasizes designing an environment that can be accessed and used by everyone, regardless of age, physical ability, or social status. This universal design is rooted in *the Barrier*-free design by providing a broader design idea for more users, i.e. all (Persson et al., 2015). Although the main goal is to create inclusivity and accessibility for all, there is often a misconception that universal design is only aimed at people with disabilities, which creates exclusivity. This perception can hinder the broader understanding and application of universal design.

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One of the main reasons for this misperception is the lack of a deep understanding of universal design principles. Universal design not only includes elements that are easily accessible for people with disabilities but also includes design solutions that benefit different groups of people, such as parents, children, and individuals with various conditions.

Examples of Perception of Exclusivity in Universal Design

The perception of exclusivity in universal design, for example, in ramp designs that are sometimes only intended for wheelchair users, can also be helpful for parents carrying strollers or workers transporting goods using trolleys. Buttons that are easy to reach and use with one hand help not only people with disabilities but also people carrying items in both hands. The same goes for the precise and easy-to-read signs, which are not only for people with visual impairments but also for everyone in an emergency. Automatic doors also

make it easy for everyone, especially those carrying heavy items, parents with children, or anyone with difficulty opening a manual door.

The lack of literacy about the understanding and benefits of universal design for all levels of society also reinforces this misperception. This can lead to limited and less optimal implementation of universal design in public spaces, which ultimately hinders the creation of an inclusive environment. Therefore, this study is needed to determine the correct perception regarding universal design.

To overcome this misconception related to the universal design paradigm, there needs to be a deeper understanding of literacy about the origin, development and benefits of the application of Universal design. This study's questions include the origin of the universal design paradigm, pros how the paradigm shifts from exclusivity to inclusivity in Universal design. Understanding the paradigm and broad benefits of universal design is expected to drive better implementation and create a genuinely inclusive environment.

Literature Review

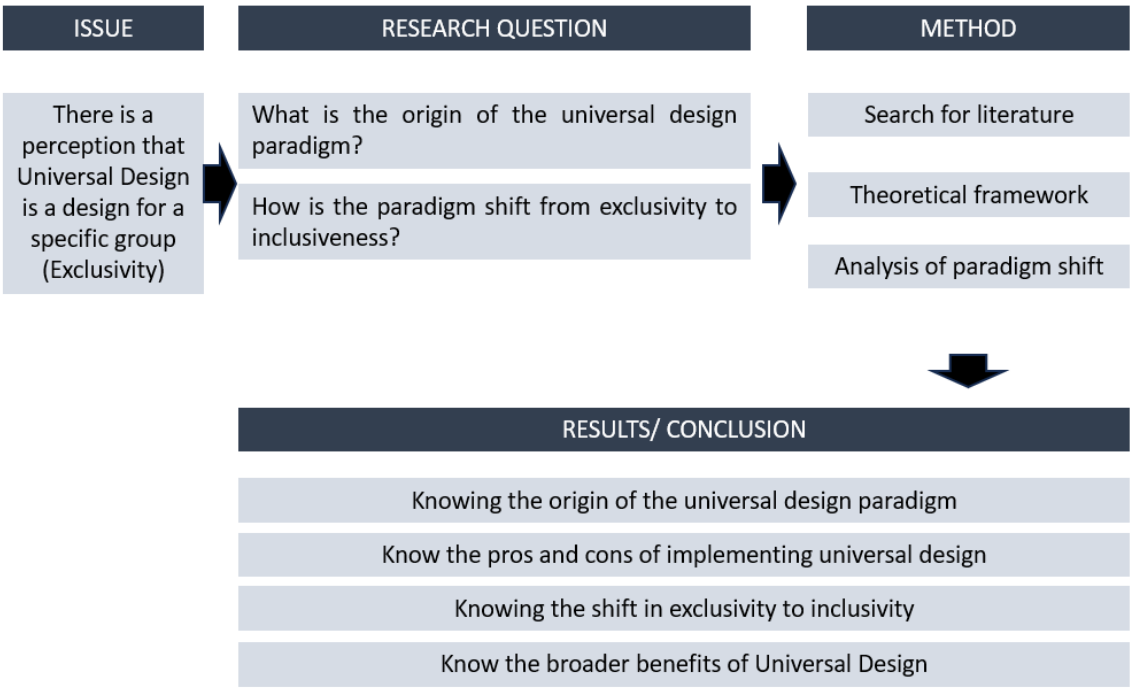
Universal design is a well-known term in the United States, and it is an inclusive design known in Europe as a design for all. Design for all is essentially the opposite of the previous approach intended for people with disabilities and the elderly as a sub-set (John Clarkson & Coleman, 2015). With the United Nations Convention on the Rights of Persons with Disabilities (CRPD), Universal design can contribute to realising a better society (Erdtman et al., 2021).

Universal design aims to reduce environmental barriers and improve the usability of buildings for all (Watchorn et al., 2023). Universal design is a concept that tries to make the lives of minorities, especially people with disabilities, better, not only by breaking down physical barriers but also by trying to include them in a way (Ben Fradj, 2013). Universal design is politically and sociologically grounded in the long historical struggle of the anti-discrimination and disability rights movement in the United States between the 1970s and 1990s. This design is defined as a design for everyone that can be used to the fullest. The concept differs from the previous barrier-free design concept, which can be adapted, special design, or easy (Erkiliç, 2011). This design refers to a broad-spectrum idea intended to produce buildings, products, and environments that are accessible to all (Rafael Pérez Jiménez et al., 2017).

Methodology

The method carried out in this study is to search for literature that is relevant to the universal design paradigm, examine the literature with a theoretical framework, and analyze it in relation to the shift in the universal design paradigm. The framework of the mindset in this study is as follows:

Figure 1. Mindset Framework
Source: Author, 2024



Result and Discussion

The Origin of Universal Design

The term Universal design began to emerge and develop from 1970-1990 and originated from an architect named Michael Bednar, who considered that the capacity of everyone's abilities could be increased if obstacles in the environment were removed. At that time, *the barrier-free design* and accessibility principles were considered to be able to reduce physical barriers in the environment so that they could be accessed by vulnerable groups, in this case, the elderly and people with disabilities (Erkiliç, 2011). As time went on, architect Ronald Mace in 1987 had another view of creating an accessible environment. According to him, the existence of a special design indirectly creates discrimination that causes people with disabilities to stand out and feel unequal. According to him, removing physical barriers for one person does not necessarily eliminate obstacles for others. Therefore, the context of understanding universal design is expanded to a design that can be used by everyone, as much as possible, without adaptation (Wang, 2008).

Universal design is a concept that evolved from the need to create an inclusive environment in which all individuals can participate fully without hindrance. The term, first introduced by Ronald L. Mace in the late 1980s, has undergone significant development from an initial focus on physical accessibility for people with disabilities to broader inclusivity, including social and technological aspects. This development reflects a growing awareness of the importance of creating spaces that are accessible to everyone, regardless of age, ability, or social background.

Development and Pros and Cons of Universal Design Implementation

In the development of universal design from its appearance to the present, it cannot be separated from the pros and cons by several related parties. Despite the growing awareness of the need to create buildings that are more accessible, comfortable, and sustainable for everyone, the application of universal design in some countries is still limited. Several countries have adopted the concept of universal design into their regulations, but many still have not been maximized. Some things considered as obstacles in the implementation of universal design are related to

the interests of key stakeholders. Architects can contribute greatly to making the built environment more inclusive for all, but many face difficulties in their design practices that hinder them from adopting a universal design approach. Budget constraints and scepticism from stakeholders are considered major obstacles, while time-related issues in the implementation of universal design are also considered constraints (Ielegems et al., 2019).

Another obstacle in the implementation of universal design is the perception that financing is higher, especially for renovation projects. The circulation aspect is one of the most expensive aspects of renovating as per universal design, but there are almost no additional costs in the case of construction (Ielegems & Vanrie, 2023).

Another problem is that there are still limited guidelines related to procedures for applying universal design to buildings, the environment and other products. So that planners and designers cannot apply universal design principles correctly. The lack of knowledge and good practice guidelines to embed universal design is an obstacle (Moore et al., 2022).

Table 1. Pros and Cons of Universal Design Implementation

Pro	**Kontra**
Long-term investment	Higher fees
Better environmental accessibility	More complex Design
Social participation	Lack of literacy/ guideline
Equality	Stakeholder scepticism
Sustainability	There is no consistency in the implementation of planning, implementation and supervision.

Source: Author, 2024

One of the drawbacks of universal design is the problem of higher costs. The "renovation" and "new development" scenarios involve costs, but in the case of applying universal design in new construction, the costs are much lower. "Circulation" and "Exterior stairs and ramps" are among the most expensive renovation costs, but there are almost no additional costs in the case examined for "new development scenarios". In addition, the application of universal design can also provide economic benefits by reducing the need for costly adaptations and renovations in the future (Ielegems & Vanrie, 2024).

Benefits of Implementing Universal Design

The main benefit of universal design lies in the principle of fair use and avoiding stigmatization of certain groups of users (Wang, 2008). One of its goals is to remove undue barriers, eliminate segregation or special treatment and enable all people, regardless of disability, age or gender, to participate equally, confidently and independently in dignified social activities (Dropkin, 2008).

Apart from the negative perception of universal design, there are actually still many benefits obtained in its application. With universal design, we can improve accessibility in buildings/environments so everyone can participate socially. Universal design can be an "old age investment" where we can enjoy an accessible space/environment as well. Although it takes a considerable effort from the beginning for the architect to create a *low-effort* room, by applying universal design, we can improve the user experience from all walks of life, which leads to user satisfaction. Then, in terms of cost, although the initial cost may be higher, universal Design can reduce the need for future renovations or modifications, saving costs in the long run.

The mission of universal design continues to be refined; Universal design plays a role as an essential context provider for an environmentally and socially healthy community (Heylighen, 2008). Universal design is a design approach that respects human diversity, addressing the right of all people from childhood to old age to be able to use all spaces, products, and information in an autonomous, inclusive, and equal manner (Preiser, W. F. E., & Smith, 2011). The Universal design concept covers the diversity of user needs over a long period as well and carries *"Leave No One Behind"* is considered to be able to support architectural practices and architectural research in implementing the goals of the UN SDGs (Øien et al., 2023).

According to (Nehad et al., 2022), universal design principles align with sustainability by ensuring inclusivity for all segments of society, promoting environmental justice, and enhancing urban integration, thus fostering smart, safe, and accessible cities. This is reinforced by another statement that states that universal design is by sustainable principles because it increases social equality and preserves cultural heritage, thus fostering an inclusive urban environment that supports the community's diverse needs (Diken & Ceren, 2022).

The universal design approach implies more equality and social justice based on design. Some researchers argue that universal design supports the *Sustainable Development Goals* (SDGs) program launched by the United Nations. A universal design is a design that can be used, to the fullest, by all people throughout their lifespan without any special adaptations or designs. Thus, universal or inclusive design can contribute to sustainability because it can be used throughout its lifespan and vice versa; sustainability is also an important point of the universal design process.

Universal Design Paradigm Shift

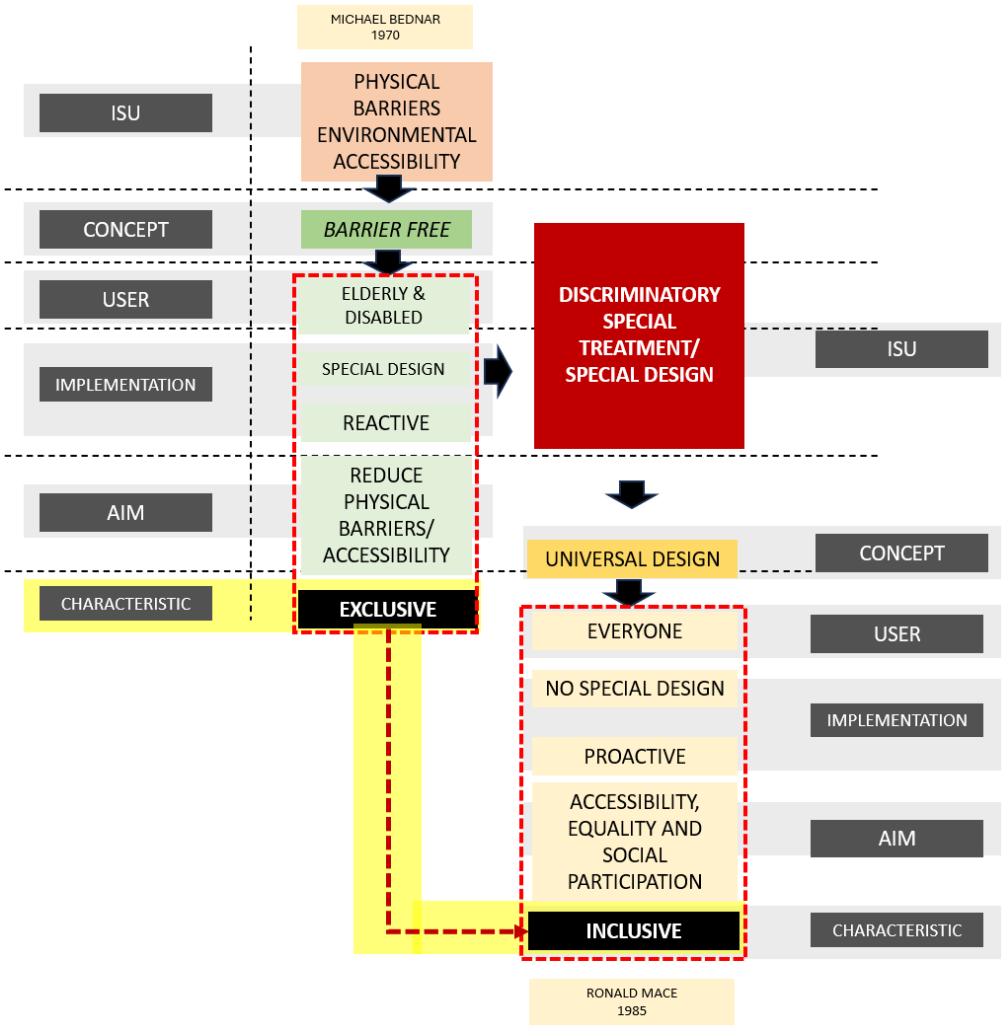
Universal design is often referred to as inclusive design, which is a development of the concept of *barrier-free* and accessibility (Kose, 2021; Rafael Pérez Jiménez et al., 2017; Watchorn et al., 2023). Different from the concept of *barrier-free* and accessibility, which only focuses on reducing or eliminating physical barriers in the environment for the elderly and people with disabilities only, universal Design has a broader meaning. Universal design not only solves the problem of physical barriers but also seeks to make the design created easy for everyone without any discriminatory views at the time of use (Watchorn et al., 2023).

A universal design that is rooted in *the Barrier-free* design by providing broader design ideas for more users, i.e. everyone (Persson et al., 2015). This concept emerged from a slightly earlier concept of barrier-free with broader accessibility movements accompanied by adaptive technology and incorporating aesthetics into its application considerations (Rafael Pérez Jiménez et al., 2017). Universal design is an evolution of *barrier-free* design by expanding the reach of users to everyone, allowing maximum possible use, and eliminating special adaptation/design efforts (Steinfeld & Smith, 2012).

The main difference between *a barrier-free* design and a universal design is its scope. The *barrier-free* design aims to eliminate barriers for the elderly and people with disabilities only. Meanwhile, Universal design aims to create an inclusive space that serves many users/everyone (Kose, 2021). *Barrier-free* design focuses on removing physical barriers, while universal design creates an inclusive environment that can be used by all individuals and promotes broader social inclusion (Mary et al., 2016). According to (Kevin, 2021), universal design is also to increase equality in addition to inclusivity. Inclusive design is a general approach to design that ensures that its products and services meet the needs of the broadest possible range of users, regardless of age or ability (John Clarkson & Coleman, 2015).

Based on some of these opinions, it can be said that the concept of *barrier-free* which, which provides special treatment for some people, inadvertently forms an exclusivity paradigm for the elderly and people with disabilities, which is considered a discrimination issue. The exclusivity paradigm changes when there is a universal design concept that brings inclusivity. In its impingement, the universal design principle differs from that of *barrier-free. Barrier-free* is more reactive in that it spontaneously overcomes obstacles (short-term). Meanwhile, universal design proactively addresses the problem of obstacles by thinking about future (long-term) uses.

Figure 2. Schema of Universal Design Paradigm Shift
Source: Author, 2024



Conclusion

The Universal design Definition is a design that is easily accessible and used by everyone as much as possible independently and confidently without special adaptation/design so that equality, justice and social participation are created. In this case, universal design can be considered as a design that respects human diversity/is friendly to everyone. This is not only related to accommodating the design physically, but also universal design tries to understand how the user of the design feels so that they can access and use it independently without any special treatment or stigma of discrimination.

The development of the universal design paradigm comes from the development of *the barrier-free* concept by expanding the spectrum of its uses from limited to the elderly and disabled to everyone. This changes exclusivity to inclusivity in Universal design. The implementation has also changed; it is no longer reactive (short-term) like the *barrier-free* concept but more proactive (long-term). The usefulness that has been around for a long time is one of the indicators that the application of universal design has sustainable properties according to the *Sustainable Development Goals* (SDGs) program and can be an investment in old age for everyone.

Behind the various obstacles in the implementation of Universal design, the aspect of understanding literacy related to universal design is the initial benchmark for its successful implementation. Specific guidance related to the technical implementation of universal design must also be provided so that designers have an apparent reference. Long-term benefits that are sometimes unthinkable at the beginning of planning must also be considered and conveyed to the parties involved and stakeholders. The meaning of long-term investment referred to in the application of universal design is a humanitarian investment, which economic figures cannot assess. The benefits obtained are more in the form of *economic value* whose usefulness can be enjoyed by many people.

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