Evaluating Compliance with Universal Design Strategies in Educational Buildings at The College of Basic Education, Kuwait: A Case Study

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Abstract:

Education is at the crux of Kuwaiti culture and is thus a priority of the Kuwaiti government, represented by the Ministry of Education and Higher Education. The Ministry of Education and Higher Education establishes schools and colleges with the highest standards of design and construction. However, despite this policy, there is a lack of attention to some important elements of universal design, creating an environment of inequity for those with disabilities or impairments. This impedes the educational attainment of students with special needs.

This case study investigates design and construction barriers to achieving universal design compliance of the academic buildings of the College of Basic Education in Kuwait. The goal is to offer insight into improving accessibility for users, regardless of their mobility status. The application of elements of universal design will be evaluated in the College of Basic Education; we examine both the Administration building

and Interior Design Department building, in particular the main entrance doors, the doors of classrooms, hallways, stairs, and restrooms. The framework utilized in this study follows Sholanke et al (Sholanke, A. B.,2020) in their study at Covenant University in Nigeria, on the compliance of accessibility with universal design strategies. A primary method employed in this study was observation, from which the researchers make recommendations for improvements in architecture and design. It is suggested that decision-makers in the Ministry of Education and Higher Education in Kuwait, take note of the following detrimental findings: The use of interlocking bricks as materials for the external college floors are untenable for wheelchair users. Automatic doors not utilized consistently, the absence of adequate ramps with heights and flows commensurate with the height of the stairs, the absence of handrails on the side of the ramps, the lack of an easy passageway to enter the bathroom, and

Key words:

Universal Design, Kuwait Education, Disability, Special needs

Research Problem

The Public Authority for Applied Education and Training is one of Kuwait's most prominent educational institutions and the largest in the number of students. Thus, ensuring that its buildings and facilities are compatible with universal design principles is crucial especially for people with special needs. The researcher noticed that buildings and facilities of the Public Authority for Applied Education and Training fail to meet international universal accessibility standards, which in turn fail to provide an equitable learning environment and affects users with special needs including students, faculty members, and visitors.

Aim of the research:

The research highlights the importance and the theoretical background of universal design principles. One of the key objectives is to highlight the importance of making educational buildings equitable, inclusive, accessible, and usable to all and especially people with special needs. It seeks to identify critical areas of deficiency in meeting universal accessibility standards. Furthermore, to investigate existing buildings to establish the conformity of their accessibility features with UD strategies. The research aims to identify areas for further improvement to the existing facilities of the Public Authority of Applied Education and Training.

Research importance:

This study makes some significant contributions to the design of educational buildings because it sets out a precise examination method and addresses the overall experience of buildings users from arrival to everyday use. The particular significance of this study lies in the attempts to examine the gap in meeting accessibility standards in light of Universal Design principles. Our findings deepen the current understanding of universal design in public buildings in general and educational facilities in particular and call for a framework to improve the quality of the built environment.

Research field :

The research is set within the field of Universal Design. Universal Design originated within the discipline of architecture and building design—the focus on making built environments usable by all people regardless of age or ability. Universal design influences various disciplines like interior design, product design, urban design, and architecture.

Research Methodology:

Qualitative research methodology was considered the most appropriate method to execute this exploratory study. The case study approach was chosen to glean the maximum amount of data targeted at describing existing conditions and circumstances surrounding Universal Design and buildings on the campus of The College of Basic Education at The Public Authority for Applied Education and Training (PAAET), Kuwait. An observational approach was taken to provide a detailed review with the purpose of advancing knowledge regarding the consistency of UD on campus.

The research site is located at the College of Basic Education— the Department of Interior Design, and the Administration building— with a focus on the main entrance door, the doors of classrooms and hallways, stairs, and restrooms. In 2008, Noor explains that the purpose of a case study is not to examine the organization as a whole, but to direct the center of inquiry to a specific unit of analysis, area, or feature—in this case particular buildings within a university setting. According to Yin (2014) case studies can be categorized into taking three approaches: explanatory, exploratory and descriptive. These approaches provide answers to the research questions of how and why. The present study can be classed as exploratory, as it is a comparison and evaluation of an existing condition, i.e., examining whether UD principles are consistently employed at the site.

The authors based the framework of this research on a study conducted at Covenant University in Nigeria by Sholanke et al. (Sholanke, A. B.,2020) on the compliance of accessibility with universal design strategies. The primary method used in this study was the observation, from which the researchers' made recommendations for design improvements. The exact replication of an experimental method can be defined as direct replication. It entails using the same tools, materials, stimuli, design, and statistical analysis. The exact replication of an experimental method is referred to as direct replication. It entails using the same tools, materials, stimuli, design, and statistical analysis. A replication study is a study that is an independent repetition of an earlier, published study, using sufficiently similar methods (along the appropriate dimensions) and conducted under sufficiently similar circumstances. (NAS. 2016). The findings gathered from replication studies lend greater credibility to the original study. It also implies that the initial study is more likely to be generalized for larger applications and future research scope.

Introduction:

The State of Kuwait, located at the head of the Persian Gulf, supports an educational policy that seeks to provide opportunities for all children, irrespective of their social class, including children with special needs. The laws regarding persons with disabilities clearly states, 'The Kuwaiti government is mandated to provide the educational services and facilities for individuals with disabilities in equity with the others without disabilities fulfilling the individuals with disabilities' special needs in communication, language and training, along with the adequate preparation of educational staff of teachers, professionals, leaders and paraprofessionals with high-levels of quality and professionality to better educate students with special needs.' (Law No. 8, 2010, Article 9).

Universal Design (UD) is a strategic concept supporting the development of products and environments that are accessible and usable to the highest extent possible by all individuals, regardless of their age, ability, or disability status. (Story, M. F.,1998). UD espouses similar principles to that of 'inclusive education,' where the goal is equal treatment

and inclusivity. The United Nations Educational, Scientific and Cultural Organization (UNESCO) describes 'inclusive education,' as the teaching of all children together in regular schools—not just children with disabilities alone. Both UD and inclusive education have gained global recognition as prominent strategies for promoting social inclusion across all population demographics, particularly in the field of education.

The Kuwaiti constitution states that education is a right for every Kuwaiti—not a privilege. Accordingly, the education of Kuwaiti students, educational design and subsequent buildings have become a high priority. The Kuwaiti government created a mandatory commission to increase standards in educational settings to promote a healthy and inclusive learning environment: 'Article 40 In conformity with the Law and within the limits of public order and morals, education for Kuwaitis is a right guaranteed by the State. In compliance with the Law, education is compulsory and gratis in its first stages. The Law shall lay down the necessary plans to eradicate illiteracy. The State shall take special care of the physical, moral, and intellectual development of youth. (Constitute Project,2022).

Although the government has enacted into law the notion of barrier-free educational and academic environments, the actual design of UD buildings appears to lack adherence to this with regard to disability, and there are also few legal and academic sources concerning this topic. In other words, little has been done to facilitate an environment that is navigable for students with disabilities within the educational buildings on campuses in Kuwait, as well as very little information exists on how to do this:

'An explicit definition of inclusive education has not been found. However, the term was used in the first initial report submitted by Kuwait under Article 35 of the UN Convention on the Rights of Persons with Disabilities (CRPD) with reference to the integration of students with disabilities in general education to avoid their social and psychological isolation. (UNESCO 2021.)

Universal Design (UD) offers much needed accessibility to disabled students, solving the problems faced by traditional barriers. When these barriers are eliminated, disabled students are free not only to learn, but to

excel and contribute in ways they may not have been able to previously. UD principles promote systematic and applicable methods to create built environments that are accessible to all—regardless of circumstance, be it: physical ability, age, or size, without need for additional modification or adaptation. (Sholanke, A. B.,2020).

Disability Research in Kuwait

It was difficult to locate literature specifically regarding disability in Kuwait, except for some occasional instances of statements offered by governmental departments, such as the Public Authority for Disability Affairs in Kuwait.

The Public Authority for Disability Affairs (PADA) in Kuwait was established by Law No. 8 of 2010, issued in the official newspaper Kuwait Alyoum No. 964 on 28/2/2010. It is a legal authority subject to supervision by the Minister of Social Affairs and Labor. In particular, the Authority approves general policies overseeing the care of persons with disabilities; develops reports; sets regulations, and defines procedures related to implementing the country's obligations as stipulated in Law No. 8 of 2010. The Authority ensures the rights of children with disabilities, promoting their inclusion in society while also supporting the development of their skills and capabilities. A key goal is to provide equal opportunities and combat discrimination based on disability with reference to Law No. 8 of 2010. (Public Authority, 2022)

According to PADA, as of August 2022 there are a total of 85, 842 persons with disabilities officially registered in Kuwait, 4,914 persons from the education sector, and 9,487 persons from the physical sector. (Public Authority, 2022)

Disability is one of the only categorizations of the population that individuals may enter into unexpectedly and at any moment in their lives. It is crucial to understand many individuals are not born with disabilities.

As mentioned, there appears to be a dearth of research and literature regarding disability in Kuwaiti society. This echoes Alenaizi's. (Alenaizi, H.2017) conclusions that, 'there is a lack of research in Kuwait and in the wider Arabian region and the voices of disabled people are totally absent

from the small body of literature that does exist.' He goes on to suggest that an intensive exploration of various aspects of disabled people's lives would pave the way for further disability research in Kuwait, or a similar Arabian context. It is agreed that this type of comprehensive study of the lived experience of disabled individuals would greatly contribute to a deeper understanding of the obstacles and challenges they face.

Other critiques suggest that disability is regarded as a medical issue or circumstance, with little recognition of the humanitarian issues of social exclusion and other discriminatory acts encountered in the daily lives of the disabled. (OHCHR,2019). In addition, it can be suggested that the lack of commitment to such issues stems from preconceived notions and a general misunderstanding of what disability actually is. The Committee on the Rights of Persons with Disabilities in their meeting September 2019. (OHCHR,2019) stated that, 'Kuwait should do more to exclude disability-based discrimination, tackle negative social attitudes and stereotypes of persons with disabilities, and raise awareness about their potential to lead productive and dignified lives, urged Committee Experts.'

In 2015 the Department of Economic and Social Affairs Disability of the United Nations created the campaign '# Envision 2030,'. (United Nations,2015) setting 17 sustainable development goals to transform the world for individuals with disabilities. The aim of the campaign is to make the world fully inclusive of persons with disabilities by 2030, and one of the primary goals targets education and educational equality. This agenda takes a holistic approach to achieving sustainable development for all, 'leaving no one behind.' Disability is explicitly referenced numerous times, specifically in relation to inequality in education, growth and employment, and the accessibility of human settlements. The framework employed includes data collection regarding disability as well as a monitoring of the actual progress of these 17 sustainable development goals to create accountability. Though the year 2030 may seem to arrive both in the near and distant future, attempts to achieve these goals need to be made with urgency. Incorporating the data gathered from this study with the resulting suggestions for implementing universal design will not only improve the daily lives of Kuwaiti students, but set the path forward to equality, a human right.

Universal Design: Definition and Seven Principles of UD

Universal Design (UD) is defined as: '…the design of products and environments to be usable to the greatest extent possible by people of all ages and abilities. (Story, M. F.,1998). Applying UD to structures allows individuals to be at ease in their daily lives by allowing them to utilize any and all facilities in the built environment. UD principles should be used as an administrative guide during the design process to ensure the same user access and rights. While this research focuses on built environments, it is also important to recognize the comprehensive theoretical aspects encompassed by UD. For example, the ideology of UD also applies to teaching and learning activities, as such activities should be readily accessible to all without the need for modification.

The Center for Universal Design (CUD), located at North Carolina State University in the United States was founded in 1997. CUD proposed seven principles for the universal design of products and settings. (The Center for Universal Design 1997). These guidelines were developed by a team of architects, engineers, product designers, and environmental design researchers at the CUD with the goal that these standards would apply to the design of any product, service, or environment. Below is a summary of these seven UD principles, with examples of applications demonstrating their use.

1. Equitable Use. The design is useful and marketable to people with diverse abilities. This may apply to a product or a physical environment. For instance, a desktop may be raised or lowered to accommodate users of varying height, or an individual who uses a wheelchair.

2. Flexibility in Use. The design accommodates variations in individual abilities and preferences and abilities. For example, a captioned video will allow people the choice to listen or to read content. This provides access for individuals with hearing impairments and also accommodates those who would rather not use sound or prefer comprehension through reading.

3. Simple and Intuitive. Implementation of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level. A tangible example would be a website that is well-organized with clear headings to facilitate access to information.

4. Perceptible Information. The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities. For example, a video includes a voiceover for individuals with visual impairments. Video captioning also utilizes this principle.

5. Tolerance for Error. The design minimizes hazards and the adverse consequences of accidental or unintended actions. For example, a hallway free of protruding objects at a height where they would not be detectable by someone with a visual impairment who uses a cane.

6. Low Physical Effort. The design can be used efficiently and comfortably, and with a minimum of fatigue. For example, an automatic door opener can facilitate access to an office space or classroom.

7. Size and Space for Approach and Use. The design provides appropriate size and space for approach, reach, manipulation, and use, regardless of the user's body size, posture, or mobility. This is illustrated in a classroom that includes a range of seating options, such as a table for someone who uses a wheelchair or wider chairs for individuals who are taller and/or larger in stature.

As with the concept of disability itself, there is some confusion over fundamental understandings of UD. Some are unwilling or unable to adequately integrate UD requirements into design. (McCannell, 2018). presents nine myths regarding UD and accessibility. Here we consider two

of these falsehoods as they appear to affect design decisions that do not support the success of UD compliance in Kuwait.

Myth #1: Universal Design is for people using wheelchairs.

In Kuwait, people generally assume universal design features are for 'wheelchair users.' This is likely why Kuwaiti educational building are not universally designed. However, no sector of the community is excluded by universal design. The idea is that UD is not made for individuals with disabilities—it is made for everyone. Most individuals are unaware of how frequently they make use of Universal Design elements, these include: touchless faucets, automatic doors, railings and steps, and ramps with slopes that make it simpler to manoeuvre strollers or shopping carts. Segments of the population such as seniors and children benefit when spaces can accommodate their needs and lifestyles.

Myth #2: Universal Design is uncreative, ugly, and boring.

Human beings enjoy and appreciate beauty in all its forms. Thus, our built environment is designed to be aesthetically pleasing as well. Some people consider Universal Design features to be unpleasant and unappealing. It is argued that a livable environment should fulfil the needs of daily life. The idea is to integrate UD features and elements within the design and marry them harmoniously during the design to create an aesthetically pleasing space that is universally useable for both disabled and abled individuals. (McCannell, 2018) states: 'If anyone can easily get to where they need to go and do what they need to do in a space, that's Universal Design in action. If accessible features are not seamlessly integrated in the overall design of the space, then chances are they represent a segregated design approach that separates people with disabilities from the main service and feature areas.' He goes on to recognize various features may appear mundane to someone able-bodied and fit, for example a hallway is just another corridor. Yet people with various disabilities may seek handrails for guidance and support, or wider hallways along which to navigate a wheelchair or service animal. Universal Design should be viewed as an exciting opportunity for designers, architects, and urban planners to create accessible spaces that are also aesthetically pleasing. On the other hand, despite the cost associated with implementing UD principles, and in some cases the effect

has to decrease the aesthetical quality of some spaces and buildings, access for all should be the main concern for clients and designers.

The National Center for College Students with Disabilities (NCCSD) is tasked with providing instructions and technical help for students with disabilities. The NCCSD conducted a series of seven student focus groups to better understand the experiences of college students with disabilities. (Scott, S.,2019). Disabled students were asked to share their opinions on what an ideal college campus would be like for students with disabilities. This research presents three primary considerations for students with disabilities that were based on this focus group's responses:

1. 'When I think about what a good campus would look like for college students with disabilities, it is a campus that embraces and works with a presumption of [student] competence.'

2. 'A good campus for disabled students would be one where there's not any extra work that comes with being disabled, that we are students just like any other student.'

3. 'A good campus is asking people to also consider [disability] in a different way, because it really does come down to access, like can I access the curriculum? Can I access the building? Can I access these events in meaningful ways? And then it's not just about who I am and what my disability is, but, [it's about] my access to things.'

These first-hand accounts are especially powerful as they describe the hopes and goals of students with disabilities. Their fundamental request is that of an environment of equality.

The observation:

The researcher conducted a detailed survey of the College of Basic Education building at The Public Authority for Applied Education and Training (PAAET), Kuwait, to examine compliance with the Universal Design principles.

From the street, the researchers noticed that there was a lack of sufficient number of accessible ramps toward the walkways; absence of signage for orientation and guidance; lack of sufficient number of allocated parking for people with disabilities—the linkage between car park and the campus buildings. The pavement material was not consistent; it was rough, and in some cases uneasy for wheelchair users. The floor surface did not incorporate any blister surfacing for pedestrian crossing points. (See Figure 1).

The pavement was wide enough, but it was not clear and is paved with rough and inconsistent materials. The colored walkways were meaningless and were not intended to assist those with disabilities. There is a lack of corduroy and hazard warning surfaces. The locations of plant boxes were hazardous and did not contribute to the development of a universal design environment. There is a lack of seating and rest areas. (See Figure 2).
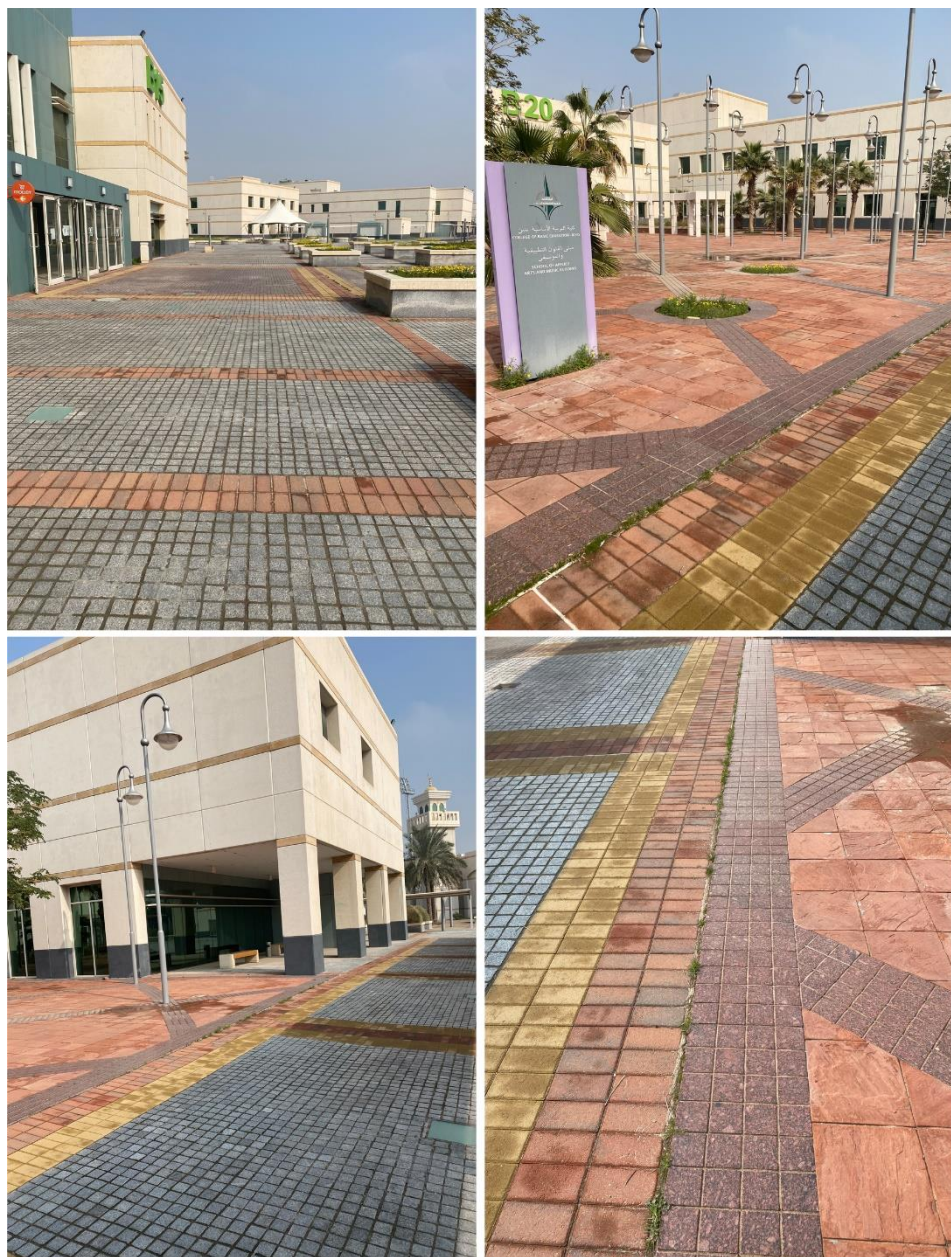
(Figure 1) Images of the linkage between the roads and the
sidewalk. (Images by the author)

(Figure 2) Images of sidewalks. (Images by Author)

(Figure 3) Images of main entrance to the college building.
(Images by Author)

The researchers found that as automatic doors were not installed, people with disabilities and those using a wheelchair or buggies find it difficult to use main doors in the campus. (See Figure 3). Additionally, the design of ramps was poor. It is recommended to provide shading devices to protect users from harsh sun during the summer months, and the rain during the rainy season, but no shading exists. The authors noticed that there were not handrails on both sides of the ramp to assess the movement of wheelchairs users, (see Figure 4).

(Figure 4) Images of sample ramps of the college building
(Images by Author)

As for steps, the researchers found that for people with limited mobility, a resting platform or landing is not provided. Steps are not visually contrasted with their background, which could lead to accidents. Textured surfaces are not used at the top and bottom of staircases to warn people with visual impairments. In addition, the researchers found that

stairs are not equipped with handrails on both sides, which causes great difficulty to people with limited mobility, (see Figure 5).

(Figure 5) Images of main entrance staircases.
(Images by Author)

Furthermore, interior corridors in the building are not sectioned by automated doors that support people with special needs to access with ease in and out of the building. In fact, doors are extremely heavy to handle for both ordinary people as well as people with special needs, and they are not equipped with electromagnetic hold-open devices which enable the doors to be held open, allowing free access for all building users, especially older people with limited strength. International standards state that interior doors should not require more than 3.6kg of force to open. (Ozturk, N. ,2011) Additionally, the fire doors don't have vision marks that allow clear vision from both sides, (see Figure 6).

The toilet door should be an outward opening door, or two-way or sliding door to provide a clear opening of at least 900 mm to allow for wheelchair access. Toilet doors in particular should have a horizontal pull-bar. Unfortunately, toilet doors and standard doors within the building do not conform to accessibility standards, (see Figure 7).

(Figure 6)Main corridors and fire doors. (Images by Author)

(Figure 7) Images of typical internal door. (Images by Author).

Results

Based upon observations of the Administration and the Interior Design Department buildings of The College of Basic Education at The Public Authority for Applied Education and Training (PAAET) in Kuwait, it was noted that both buildings are not designed with UD standards in mind, as students with special needs had difficulties navigating their movements within these college facilities. Analyses based on observational data gathered on the Administration and the Interior Design buildings in The College of Basic Education find that the decision maker(s) responsible for designing and building these structures did not follow UD regulations. In fact, it was evident that students with disabilities frequently encountered obstacles that impeded their movement. Public buildings and in particular, the educational buildings, must incorporate universal design, allowing all those who attend to have equal rights and egress to all facilities within the college. Therefore, the Ministry of Education in Kuwait should implement a directive to supervise their designers to ensure that UD design is implemented in all government and public buildings.

Decision makers should increase their efforts and commitment to ensure that every educational building is accessible for everyone, regardless of their disability or ability status. For colleges, this needs to be applied to the whole campus: administrative services, lecture halls, cafeterias, libraries etc. The vast majority of measures that meet the needs of students with various disabilities are easy to implement. The following improvements create elegant and efficient accommodations for all students to utilize the campus space:

- Automatic doors.
- Guide paths for orientation.
- Elevators and access ramps.
- Visual contrasting non-slip stair nosing.
- Audio beacons located at strategic points of interest (entrances, reception desk, assembly rooms, etc.)
- Universal pictograms.
- Braille signs.
- Audio induction loops.
- Accessible restrooms.

Various institutions globally have implemented these UD elements without difficulty.

Conclusions

There is an expectation that equality is a fundamental human right and that individuals should have equal access to facilities and institutions. Kuwaiti students attending classes within governmental educational premises should not have to request special services or assistance simply to operate within these public spaces. Disabled students should experience the same opportunities and benefits as able-bodied students within the educational environment. This is a matter that should be given much more attention by the Ministry of Education in Kuwait. Decision makers should actively work harder to prevent the seclusion and exclusion of disabled students in education environments. This is not simply an educational issue—it is a humanitarian issue. Applying UD principles in educational settings can help to provide more equitable opportunities in Kuwaiti society.

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تقييم الامتثال لاستراتيجيات التصميم العالمي في المباني التعليمية ضمن كلية الدراسات الأساسية في دولة الكويت: دراسة حالة

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المستخلص:

يعد الاهتمام بالتعليم من أولويات الحكومة الكويتية، والتي تمثلها وزارة التربية والتعليم العالي. وتقوم الوزارة بإنشاء المدارس والكليات وفق أعلى معايير التصميم والتنفيذ. ولكن على الرغم من ذلك هناك قصور بيّن في تطبيق مبادئ التصميم العالمي، مما يؤدي إلى إقامة بيئات غير عادلة لذوي الاحتياجات الخاصة، الأمر الذي يعيق العملية التعليمية للطلبة ذوي الاحتياجات الخاصة.

إن هذا البحث ينظر في عوائق تحقيق معايير التصميم العالمي ضمن مباني كلية التربية الأساسية التابعة للهيئة العامة للتعليم التطبيقي والتدريب. ويهدف البحث إلى تقديم رؤى تعمل

على تطوير الحركة وتسهيل التنقل لكافة المستخدمين بغض النظر عن إمكاناتهم الجسمانية. وقد تم استخدام عناصر التصميم العالمي لتقييم المبنى الإداري ومبنى قسم التصميم الداخلي وبشكلٍ خاص المدخل الرئيسي ومداخل الفصول والممرات والسلالم ودورات المياه.

وقد اتبع البحث الإطار النظري الذي تم وضعه في دراسة (Sholanke et al Sholanke, A. B.,2020) والذي نظر في مدى تطابق مباني جامعة كوفينانت في نيجيريا مع استراتيجيات التصميم العالمي. إن أهم منهجيات البحث هي المشاهدة، والتي مكنت الباحثين من تقييم الوضع القائم، ورفع التوصيات لتطوير العمارة والتصميم. ويقترح الباحثون على متخذي القرار في وزارة التعليم العالي ملاحظة استخدام أرضيات خشنة من البلاط المتداخل والتي تعيق مستخدمي الكرسي المتحرك، وعدم استخدام الأبواب الأوتوماتيكية وعدم ملائمة تصاميم المنحدرات وعدم استخدام الدرابزين وعدم ملائمة ممرات دورات المياه.

الكلمات المفتاحية:

التصميم العالمي، التعليم في الكويت، الإعاقة، الاحتياجات الخاصة