State of Art and Perspectives of Universal Design: The Libyan Approach

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Abstract. Through this paper, we have highlighted the importance of a Universal Design orientation within the architectural community in Libya; it attempts to shed light on some of the different initiatives, experiences, applications, and projects in the field of accessibility and Universal Design to provide a hospitable urban environment that can accommodate all segments of Libyan society. The paper discusses the difficulties of architectural integration and the need for comprehensive education, training, and proof of concept applications by reviewing some inspiring projects undertaken in Libya to encounter this issue. The paper concludes by looking forward to practicing the design orientation for all in Libya by discussing the opportunities available after the tremendous political and economic change in Libya post-2011 and the need for reconstruction programs that adopt the Universal Design doctrine on suspended and future urban projects, furthermore the need to establish a national strategy, and law binding commitment in this context.

1. Introduction

The urban environment that responds to the requirements of the human being today is a topic that receives increasing attention at the global level, and the realization of a shortcoming in understanding the requirements of human diversity is increasing. The great challenge for architects and engineers to understand human limitations and diversity continues, creating urban environments that only complement the needs of the abled and neglect the less able segment of society. Moreover, this is more apparent in Libya. International regulations require us to follow a practical approach that responds to the needs of all segments of society. The "International Convention on the Rights of Persons with Disabilities" includes in its 9th article "Accessibility," in which it is indicated that the signatory countries are obliged to ensure that persons with disabilities can access the environment on an equal basis with others [1]. The 2002 Madrid International Plan of Action on Ageing also emphasized the built environment as a supportive environment for the movement and communication of older persons and the design of age-friendly homes and ensuring their access to buildings and open space [2]. The Libyan urban environment is specifically hostile regarding access for people with physical limitations as international regulations are not reflected and implemented, causing the reduction in their opportunities for a more developed standard of living.

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2. Historical overview

2.1. Disabled Persons Act

In 1976, the General Assembly proclaimed 1981 as the International Year of Disabled Persons (IYDP). The Assembly called for a plan of action at the national, regional, and international levels, emphasizing equalization of opportunities, rehabilitation, and prevention of disabilities; In response to this occasion, the Libyan state decreed a law for the disabled, under Law No. 3 of 1981, which was later amended in 1987 to be renamed Law No. 5 of 1987 [3].

In June of 2017, the Libyan Parliament (House of Representatives) ratified the international Convention; as a result, many organizations, specialists, and those interested in the field are calling for the amendment of Law No. 5 regarding the disabled to keep up with new concepts and developments internationally [4].

2.2. Libyan National Conference on Access for Persons with Disabilities

From the 13th to the 14th of December 2010, "The Libyan National Conference Access for Persons with Disabilities" was launched in Benghazi to address the Right to access for persons with disabilities and the built environment transportation design. The conference was the first Libyan social event where several international speakers highlighted issues concerning policies and practices that fully integrate the urban environment to accommodate people with disabilities and how to tackle the issues facing the implementation of a Universal Design doctrine [5]. The conference was considered a turning point for many designers and civil activists as it was the largest on a national level, including international experts in Universal Design; The event was perceived as a great success in assembling a large number of architects, civil engineers, planners and institutions responsible for infrastructure, housing and transportation projects in Libya.

2.3. Personal history and involvement

As a student at the Architecture and Urban planning department at the University of Benghazi, I suffered an accident that rendered me use a wheelchair for the rest of my life. During this unfortunate time, I was in denial of my current status, believing that this must be only temporary and life like this cannot be burdened, leading me to travel to Europe for treatment and rehabilitation, seeking a hope of full recovery; As I arrived there, my eyes were opened to two realities one harsh and the other of hope, the harshness of knowing and later acknowledging my status quo of never recovering, the hope I found as I experienced the consideration that was built into the urban environment.

When I returned, my graduation project was titled design and planning for the Disabled and dealt with the architectural obstacles in urban space residential, administrative, and educational buildings; As I had hoped, the research raised awareness of the subject and left its impact on the Department of Architecture. However, this was not enough. I was later inspired to embark to Austria in 2003 to study and work with recognized experts in the field of Accessibility & Universal Design with the support of the United Nations Development Program UNDP, which was an exceptional event and a very important milestone in my experience in general, my visit took the duration of the month which was primarily spent in Vienna and Graz were I met with governmental and private institutions and advisory bodies, and I got to know distinguished experts in the

field of Universal Design and was enlightened to their achievements the rest of the time I spent was not of less importance as I found myself admiring and analyzing urban areas, streets, squares, buildings, cafes, parks, everything I witnessed from Universal Design and design for the disability aspects had a rich material impact that formed a critical knowledge base and tributary that help me encounter the obstacles that faced this vital segment of society in Libya , and to provide the ease of access and maneuverability placing the less mobile persons and others on equal footing.

3. A hands-on approach

3.1. Establishing Al-Ttyseer Ltd

AL-Ttyseer consulting and training company was established in 2006 as a practical response to the lack of awareness and information regarding design requirements for all, the company was formed by a team of architects, engineers, and civil activists with a mission of providing specialized consultancy in the relationship between the built environment and its users, and a vision to create an urban environment that accommodates all on equal footing. After this field and Universal Design; the company was in a position it could present its experience in the form of a modest initiative to contribute to the development of urban planning and design and implement both the vision and mission that the company was set to accomplish; However the task proved to be more challenging than we first thought mainly to the lack of awareness and initiatives imposed on governmental and private institutions to make such considerations to their urban environment or seek such consultations in such a specialized area. Therefore, Al-Ttyseer needed to adopt a different strategy and take a back-route approach to re-establish itself as a traditional consultancy company that handles all design issues and supervises contracting companies executing projects. The company introduced concepts of Universal Design within its services, which became a factor of added value that distinguished it from the other consultancies; Furthermore, the company sought to get involved in the education sector to introduce future designers to the standing issue by conducting free Lectures and workshops incorporation with several local architecture schools to introduce and enlighten their students about the needs of persons with disabilities and how they must be a moral obligation of a designer to take into consideration the ease of navigation of all segments of society, and how their future designs must be enjoyed by all, and not seen as nothing but pretty urban obstacles to the less maneuverable segment of that society.

3.2. The first Universal Design model (Libya Children's Theatre)

The Children's Theatre was an unfinished project near the Benghazi National Zoo; The project was left in the skeleton stage, with only concrete and brickworks completed; the building was left without maintenance or completion for a long time nearing 20 years of neglect. In 2008, AL-Ttyseer was entrusted with the re-design of the building's interior and exterior; this was the first practical opportunity to showcase a living example in the application of Universal Design on a public building in Libya; through this project, practical ideas were presented in many elements and components of the building based on the concept of Universal Design, the structure was reintegrated with accessibility elements that are frequently executed incorrectly, such as the design and implementation

of ramps, Accessible WC, stairs, handrails, color contrast, details of the reception counter and lighting spots.

The Children's Theatre presented the argument that the design application was possible in a half-completed building filled with barriers and challenges, and this did not entail an increase or modification in the building implementation contract. Therefore, it is more appropriate to follow the Universal Design approach in the new projects in Libya, which should not be a subject of controversy or discussion. The theatre has contributed to being an educational model as well, as many meetings of architects and building engineers take place in it, and it has also become a destination for university students to visit, especially architecture and civil engineering students, such a living example for future designers was a vital introduction and primary motivation for adopting the idea of architectural education for Universal Design.

3.3. Training Initiative Arabian Gulf Oil Company (AGOCO) and Al-Ttyseer Ltd

In 2006 Al-Ttyseer Ltd presented a proposal to the Arabian Gulf Oil Company (AGOCO) to conduct a training program for the company's engineers in the fields of urban Design, Architects, civil; the program intended to provide architects and building engineers with knowledge and skills to design and construct buildings accessible and usable by all. The proposal contained an extensive program with a 20-hour course duration spread over five days, at a rate of 4 hours per day; with a core goal of establishing a design mindset for architects and building designers that accommodates the needs of all segments in a natural manner and primary focus on understanding human diversity before applying standards and specifications. The program syllabus was to take the already professional trainees through a multi-stage recalibrations process, starting with inaugurating awareness among the participants not only of the needs of people with disabilities but also of planning for the diversity of people; then elevating them to the Inspiration level where they naturally started to rethink traditional design concepts and gained a somewhat free-flowing consideration when thinking of end-users from a diverse point of view.

The program's final stage was to incorporate the awareness and inspiration with the necessary tools and skills to make practical use of the content learned as the trainees were introduced to Universal Design and explored issues of technical and operational solutions that are appropriate under various conditions of their built environment, and costs of intervention and loss if we do not intervene; Moving onto an overview of accessibility standards and legislation in Austria and Europe in general. Finally, exploring and discussing design applications during the planning, design, and implementation stages and how such Applications can be applied to projects under implementation or existing projects so that trainees work on applying what they receive from theoretical information in reviewing, evaluating, and developing. The program was met with widespread enthusiasm by AGECO and the trainees, as the program was continuously extended and conducted as part of the Company's Personnel and city's Engineers Development Program; seven courses were implemented, involving 200 trainees; Consequently, many learned concepts were later adopted by the company as design standards for all future design constructions.

3.4. The Shining diamond project for the National Oil Corporation buildings

National Oil Corporation (NOC) intends to construct a complex of buildings in Benghazi. Implementing the design was assigned to the Italian company Artelia [6].

Artelia had a subcontractor also in architectural design BOERI. The Oil Corporation has appointed 8 Engineers of its staff to supervise the design stages. The team hired three consultants from outside the National Oil Corporation; I was chosen to be one of the consultants by the Project owner to do a review about accessibility. What distinguished this experience is that the Universal Design consultancy is integrated with the rest of the consultancies related to their specializations which created a greater understanding and flexibility in modifications and additions required to implement the Universal Design standards on the project. The results were profound, with minor setbacks and concessions; However, the results created a Universal Design for an administrative complex in the heart of Benghazi that was fully accessible to all segments of society. In my estimation, the owner welcomed and supported the experience and received positive acceptance and interaction from the company and the project's designers.

3.5. The accessibility of the polling stations - the experience of the Electoral Commission

The "Persons with Disabilities Support Unit" was established after a group of National organizations concerned with persons with disabilities requested the High National Elections Commission of Libya to promote the equal rights of persons with disabilities in political participation. Based on these demands, the commission issued Resolution No. 49 of 2017 to establish a unit within the organizational structure of the commission to follow up on the awareness campaigns. Since the team received the tasks entrusted to them, they have put within its annual plans to raise the participation rate of voters with disabilities and work to overcome the difficulties and challenges they may face during all stages of the electoral process. Throughout the 2012 and 2014 election cycles, the commission equipped 174 polling stations with the requirement to accommodate the needs of persons with disabilities; However, this was challenging due to the difficulties of integrating such standards into the facilities due to long bureaucracy cycles in the Ministry of Education, such setbacks hindered the integrity of the perceived outcome; To tackle this obstacle and establish a long term solution, the commission trained active employees of the Ministry of Education on Universal Design. However, the officials lacked the commitment and empathy toward the needs and requirements of persons with disabilities and that they have the same civil rights as the other segments of society, resulting in many imperfections in the final delivery of the program, without neglecting the importance of the forward movement and improvement it achieved in general.

3.6. The Access campaign for disabled people's organization

Founded in January 2019 with a mission to ease the access of persons with disabilities to knowledge and other education facilities in universities by amending law No. (5) of 1987 Concerning People with Disabilities, activating the International Convention on the Rights of Persons with Disabilities, and raising awareness of the rights of persons with disabilities [7] [8]. The organization's members are composed of people with disabilities and parents of people with motor, visual, and mental limitations, as well as civil and human rights activists from all regions of the country; The organization has conducted many workshops and conferences to raise awareness in many higher education facilities in Libya, were the central issue of facilitating ease of access was brought to the attention of those respectable universities so they could work alongside with the organization to encounter this significant problem.

The organizations encountered and tried to resolve many issues and setbacks, such as the lack of educational rights of this segment of society, where many considered the issue to be a matter of charity, not a constitutional right, other matters that the organizations faced were the absence of plans to finance such improvements and implementations to the higher education sector facilities. The organization members conducted several rallies and social events to gain public support; this was done to implement socio-political pressure on the governmental authorities and legislative bodies in Libya to move toward change and improvement.

3.7. The Education on Universal Design in Architecture curriculum, The University of Berenice Experience

Berenice University of Architecture and Urbanism BUAU is an educational institution established in 2016 in Benghazi. University professors and academics established it based on their long experience in the field of architectural and urban engineering; Since its inception, the BUAU has always sought to raise the level of professional and academic practice as well as leadership, excellence, and creativity in the fields of university education and scientific research, and to consolidate its position in building a society based on science and knowledge. According to this mandate, the university felt that it had a scientific commitment and moral obligation to add Universal Design concepts into its teaching program, and I was honored to be chosen by the institution to develop and teach this course. In the 2020-2021 academic year, the university began accrediting an educational course under the name (Universal accessibility and design for all) and linked to Design studio 7, the course intended to bridge the gap between functionality and architectural harmony by integrating Universal Design concepts into buildings and urban environment to design and create an urban environment that can be marveled, and enjoyed by all.

The module was taught via 16 lectures 3 hours each, every session framed around an interactive lectures style that started with questions and issues and developed creative answers and then later explored how such results could be adopted. The course also explored concepts and definitions; Furthermore, the students were encouraged to debate, explore, and challenge mainstream solutions and concepts adopted nationally and internationally; the students had to conduct four exercises, the first being a global case study, several global examples are chosen in which the concepts of Universal Design are manifested, whether from the beginning of its design idea or modified later. This exercise inspires the overall design to be a renowned architectural design. The second exercise is about accessibility standards, where students are familiarized with accessibility standards. This course was essential for students to acquaint themselves with the Universal Design standards, and here a sample of international standards is selected as a focal point of study. During the last semester, students used five standards being ISO 21542:2021(Building construction – Accessibility and usability of the built environment), Dubai Universal Design Code, DIN 18040-1:2010-10 Construction of accessible buildings – Germany, ADA Standards for Accessible Design 2010 -USA, and CEN EN 17210:2021- Accessibility and usability of the built environment respectively. Then, the students are directed to conduct a comparison project between the five standards in terms of the specifications they include and the functional requirements of human diversity, where the students learn about how the standards deal with the functional elements of the building and the open spaces, how each standard deals with these elements, and to what extent they are Comprehensive, easy to understand and

navigate to the user, its applicability and how to explain it correctly within the designs. Finally, the student is instructed to conduct an application project where they have the opportunity to apply what they learned is evaluated alongside the design studio module to give a broader perspective on the students' knowledge. The application project for universal accessibility is done by each student choosing a complete, half-complete, or suspended building from any location within Libya and conducting an extensive evaluation and study about its accessibility, and presenting creative solutions and ideas without compromising the structural or functional integrity while maintaining full architectural integration concept desired by the original designer; In addition to all this, the students conduct a final theoretical exam at the end of the course. Through this experience, I can say that comprehensive university education is essential for the future generation of Libyan architects, where the gap between architecture and Universal Design can be bridged. One has come to realize in the discussions I conduct with students who have completed three years of studying architecture and are now in the fourth year that they are discovering something new, that they are reconsidering everything they have learned, and are capturing the true essence of function in architecture.

3.8. The Libyan Code Project for Universal Design

Addressing the issue of Universal Design to the built environment has been an ever-growing demand and concern of the disabled people within Libya and a mandate for the Libyan Social Solidarity Fund (SSF) to counter and overcome to meet the requirements of disability inclusion within society. However, this endeavor has been hard to overcome due to the absence of a legally binding standard that guarantees the implementation of Universal Design in the built environment. The SSF launched The Libyan Code project on the 23rd of December 2021 and contracted AL-Ttyseer Ltd on the 13th of April 2022 for seven months. The Attyseer Ltd project board established a four-stage plan to conduct and deliver the final product of this project.

The stages were broken down into the following: The first stage will be conducting a comprehensive study of the current status of the built environment in Libya and its accessibility for people with disabilities and identifying difficulties, problems and challenges, in addition to studying the relevant legal and legislative aspects, including planning and building legislation in Libya. The second stage composes of the preparation of a first draft of the Libyan code for Universal Design to the built environment, facilities, and services; The development of this draft will be based on the principles of Universal Design, and global development in accessibility standards, including application options for government and private agencies to three levels (compulsory - highly recommended - optional). The third stage consists of a full evaluation of the draft, which will be done by conducting a thorough review with the relevant authorities and stakeholders, including the SSF and Libyan House of Representatives (HoR), and hosting three workshops to discuss the possibility of implementation and any comments the in which the feedback will be collected and analyzed to reform and enhance the draft for end product delivery. The fourth stage will be formulating the final version of the Libyan design code to be delivered to SSF and later adopted by the Libyan legislative body to be implemented and enforced by law.

4. Conclusion

The orientation towards Universal Design in the reconstruction of Libya at an early stage and making the subject one of the focuses of the reconstruction process in all its stages, "planning, design, and implementation," is of great importance and will allow us to respond to multiple and overlapping social issues. Nonetheless, this implementation also has an economic and political dimension and an integral part that must be considered. The ideas and projects presented in this paper represent some applications in the form of isolated islands, but they certainly do not represent a general policy for Libya yet. The great diversity of construction projects contracted before the Arab Spring are mostly suspended; however, unfortunately, the majority of these projects do not consider the needs of a wide variety of people, including people with disabilities and the elderly. When the current designs complete these projects, Libya will ultimately fail to achieve the 2030 Agenda for Sustainable Development plan.

Libya needs more to establish an understanding and persuasion that Universal Design is not only limited to the human view but goes beyond it to economic, social, and political dimensions; this requires building a carefully prepared, enforced, and binding national strategy for Libya that guarantees to obtain tangible results in the final form of the urban environment, transportation, and information, and the extent of its ability to interact and respond to the requirements of today's human being. Libya has vast financial resources and human resources through an ambitious rising generation that lies in providing it with the necessary knowledge and training to fulfill these requirements. Perhaps the presence of suspended projects is a significant opportunity to complete them according to the Universal Design approach, and the experience of the Children's Theatre has proven that this is possible. The destruction caused by the second Libyan civil war, especially the centers of the city of Benghazi and Sirte, is unfortunate. However, it presents a valuable opportunity to implement Universal Design concepts in the reconstruction projects of those areas on a design and foundation level.

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