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INEFFECTIVE REHABILITATION FOR THE INDEPENDENCE OF THE BLIND AND VISUAL IMPAIRED IN SOUTH-EASTERN NIGERIA: THE CASE OF NEGLIGENCE TOWARDS BLIND VOCATION AND HABITATION.

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ABSTRACT

The design of a vocational rehabilitation centre for the blind and visually impaired in Anambra State, Nigeria, presents a unique opportunity to create an inclusive and empowering environment for individuals with visual impairments. This abstract provides an overview of the architectural considerations and design principles that underpin the development of such a facility. Drawing upon the principles of universal design, sensory architecture, and spatial organization, this project aims to create a vocational rehabilitation centre that fosters independence, enhances accessibility, and promotes a sense of empowerment for its users. Universal design principles ensure that the facility is accessible and usable by individuals of all abilities, accommodating a diverse range of visual impairments and promoting inclusivity. Sensory architecture focuses on creating an environment that engages multiple senses, providing spatial cues, tactile elements, and auditory guidance to support way finding and navigation. The design incorporates elements such as tactile flooring, clear acoustic signalling, and contrasting materials to facilitate orientation and promote independence. Spatial organization plays a crucial role in optimizing the functionality and efficiency of the centre. Careful consideration is given to the arrangement of spaces, circulation paths, and the seamless integration of assistive technologies. Functional areas such as training rooms, workshops, assistive technology labs, and counselling spaces are strategically located and designed to facilitate ease of use and promote a sense of community. Furthermore, this abstract highlights the significance of the study in addressing the lack of specialized vocational rehabilitation facilities for the blind and visually impaired in Anambra State, Nigeria. The design of such a centre not only provides a physical space for skill development and vocational training but also creates opportunities for social interaction, empowerment, and economic independence for individuals with visual impairments. In conclusion, the design of a vocational rehabilitation centre for the blind and visually impaired in Anambra State, Nigeria, is a crucial endeavour that requires careful attention to architectural considerations and design principles. By incorporating universal design, sensory architecture, and thoughtful spatial organization, this project aims to create an inclusive and empowering environment that supports the unique needs and aspirations of individuals with visual impairments.

Keywords: vocational rehabilitation centre, blind, visually impaired, universal design, sensory architecture, spatial organization, inclusivity, and empowerment.

Introduction

The sense of sight has always overpowered the other senses when one has to perceive the world around. What if we suddenly lost our sight, how could we navigate our world? How is a visually impaired individual supposed to live and explore their day-to-day life? In

thinking about this, it became clear how critical vision is. The process by which we collect and comprehend the outside world by means of our senses is called perception. (Pallasmaa, 2005)
So, one tends to ask many questions in order to start with the research. Can we perceive architecture through all the senses other than sight in the same way as it is perceived through sight? Could designers, provide more opportunities for the use of non-visual senses in a built environment? What method may the designers employ to provide multi-sensory experiences to visually-impaired individuals and by what method may the designers better orient and guide the visually impaired in a built environment through their design? So the research began to focus on this aspect where it tries to find answers for the above-asked questions.

American Architect, Richard Neutra (1949) commented "that we should devote as much attention to all the non-visual aspects of our environment. He also anticipated that the design becomes very limited for those who fail to consider the use of other senses."
So, one might ask that, does a multi-sensory experience improve our understanding of the space? Can these approaches focusing on multi-sensory perception amplify the understanding of architecture? Mallgrave (2013) supports this need for a connection between body and space. . He explains that "Architecture has always been first and foremost something to experience with the body and the senses, not an intellectual exercise enacted exclusively on a symbolic level."

To understand space, a visually impaired user must draw on all of their remaining senses, combining this information and using their senses in cooperation, rather than isolation, to be certain of their surrounding environment. (Heschong,1996) This spatial perception is not possible without the combination of all of the senses, unlike the primary reliance on the visual by the sighted. Blind people almost certainly require more time to become accustomed to environments, they explore the building, listening to the spaces and the way their body influences the space. They touch and physically engage with the building, becoming more aware of their surroundings. Like the sighted, the blind walk through time not through space, but their awareness and engagement with space is likely to be much richer than the experience of a sighted person (Heschong, 1996).

Globally, it is estimated that 285 million people are living with visual impairment and, of these, 39 million are blind (Pascolini et al, 2011). About 90% of these individuals live in low- income nations, and 82% of people living with blindness are aged 40 and above (Pascolini et al, 2011). Nigeria is categorised as a sub-Saharan country in Africa; in the sub-Saharan countries, the prevalence of blindness among those aged 40 years and older is estimated to be one of the highest in the world at 9% (Abdull et al, 2009).The last national visual impairment survey carried out in Nigeria, it is estimated that there are 4.25 million people of 40 years and older, who have moderate or severe vision loss that interferes with everyday activities, and 1.13 million are blind (Kyari et al 2009). There is a high prevalence of acquired visual impairment among middle age adults in Nigeria (Kyari et al 2009). The most

common causes of which are cataracts, uncorrected refractive errors, and glaucoma (Abdull et al 2009)

Having good vision is an integral part of many key life experiences, such as education, employment, and social relationships (Boerner & Cimarolli 2005). The impact of acquiring a visual impairment in adulthood, after the development of visual memory, has been shown to impact activities of everyday living such as reading, dressing, eating, writing, mobility, and communicating or interacting with others (Pagliano, 2011)

Table 1.0.0: Estimated number of visually impaired and blind persons aged ≥40 years in the GPZs

Estimated Number of Visually Impaired and Blind Persons Aged ≥40 Years in the GPZs

GPZ	Blindness				SVI					Moderate VI
	Prev. (%)	Estimated No.	95% CI	Prev (%)	Estimated No.	95% CI	Prev. (%)	Estimated No.	95% CI	
North West	4.84	323,764	270,765–385,756	1.48	98,618	74,878–129,700	8.27	552,632	483,365–630,447	
North East	6.14	221,993	171,076–286,814	1.39	50,263	34,721–72,698	10.89	393,725	330,577–466,932	
North Central	3.75	180,851	142,916–228,376	1.72	83,287	56,973–121,189	7.10	342,665	278,107–421,023	
South West	2.79	150,930	120,813–187,991	0.88	47,662	31,422–72,054	9.64	522,300	452,371–601,898	
South East	4.63	126,039	98482–160,781	2.05	55,654	39,991–77,262	13.12	356,839	298,166–424,941	
South South	3.24	122,365	89,515–166,943	1.78	67,301	47,213–95,558	13.71	518,012	444,931–600,543	
Nigeria	4.19	1,132,295	1,027,738–1,246,808	1.49	403,965	351,595–465,187	10.04	2,714,324	2,542,299–2,896,598	

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Furthermore, living with blindness is associated with loss of self-dependence, depression, diminished employability, difficulty in maintaining employment, and interference with functional life goals (Boerner &Cimarolli 2005). Therefore, it is expected that adults with acquired visual impairment in Nigeria may experience functional limitations and that visual rehabilitation services aiming to address these limitations may be required (Maxson et al, 2012).

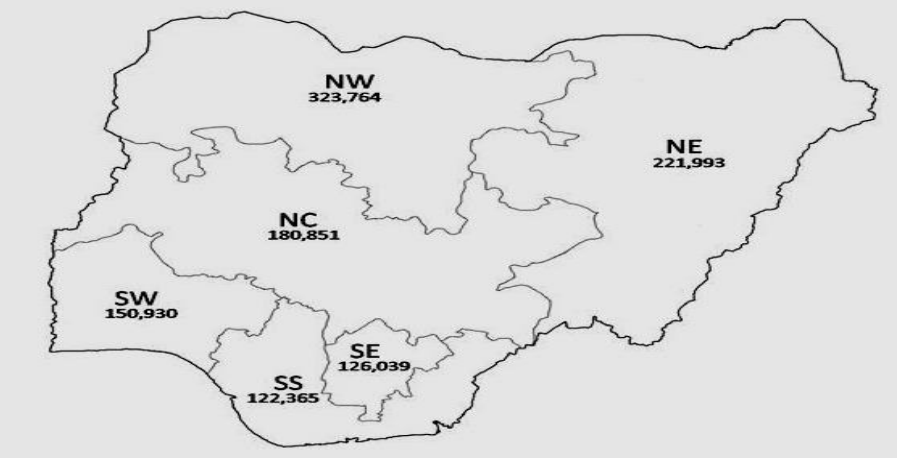


Figure 1.0.0 the estimated number of adults with blindness in different geopolitical zones in Nigeria

The estimated number of adults with blindness in different geopolitical zones in Nigeria NW, North West: NE, North East: NC, North Central: SW, South West: SE, South East and, SS, South South (*https://iovs.arvojournals.org/Accessed on 20/9/21*)

However, based on the National Blindness and Visual Impairment Survey conducted in 2005 to 2007 shows that 4.25 million adults aged ≥40 years in Nigeria have moderate or severe visual impairment or blindness. The >1 million adults with blindness in Nigeria are therefore in urgent need of attention, as are the additional 3 million with severe and moderate visual impairment who would benefit from eye care services. This million-plus pool of persons with blindness also impinges on national productivity, as it entails not only a loss of income of affected individuals but also lost wages and time of those caring for them. In a resource-constrained country like Nigeria, priorities should be set with specific attention paid to the middle-age and older population, as an overwhelming proportion of blindness is concentrated among this segment of the population. (Berhan et al 2009)

Problem Statement

A study of all new patients seen over a 12-month period in a teaching hospital eye clinic in Anambra State, Nigeria shows that 257 out of 820 (31.3%) had low vision in at least one eye.Of the 257 patients, 36 (14%) had bilateral blindness, 71 (27.6%) had uniocular blindness and 181 (70%) had visual impairment in at least one eye. Cataract (33.3%), glaucoma (22.2%) and macular degeneration (11%) were the leading causes of bilateral blindness. (S.N Nwosu, 2019)

In Anambra State, Nigeria, individuals who are blind or visually impaired face numerous challenges, including limited access to education and vocational training opportunities, lack of employment prospects, and social stigma. The unemployment rate among individuals with disabilities in Nigeria is estimated to be as high as 80% (ILO, 2015). According to a survey by the National Bureau of Statistics in Nigeria, only 17% of people with disabilities in Nigeria are employed, compared to 69%

of those without disabilities (NBS, 2019).

Furthermore, the built environment in Anambra State is often not designed with the needs of individuals with visual impairments in mind. This creates additional challenges for independent living and work, including navigating public spaces, accessing transportation, and accessing buildings. These challenges can further limit the opportunities for individuals who are blind or visually impaired to participate fully in their communities and the workforce.

Therefore, there is a pressing need to establish a vocational rehabilitation centre that is inclusive of the needs of individuals with visual impairments and is designed using principles of sensory architecture. This centre could provide training and employment opportunities for individuals who are blind or visually impaired, as well as other services such as counselling, assistive technology, and peer support. By establishing such a center, individuals with visual impairments could gain the skills and resources necessary to live independently. Furthermore, such a centre could serve as a model for other regions in Nigeria facing similar challenges in meeting the needs of individuals with visual impairments.

Objectives

The objectives required to actualize the aim of the project include the following to adopt:

1. To design an architectural layout that prioritizes accessibility and universal designprinciples.
2. To incorporate sensory Architecture principles into the design of the centre.
3. To optimize the spatial planning and circulation within the centre to facilitate easy navigation and orientation for individuals with visual impairments.
4. To develop a lighting design strategy that caters to the specific needs of individuals with visual impairments.
5. To address acoustic considerations in the design to create a conducive environment for individuals with visual impairments.

Motivation/Justification of the Study

The design of a vocational rehabilitation centre for the blind and visually impaired in Anambra State is justified by the need to provide equal access, empower individuals, enhance rehabilitation outcomes, address service gaps, promote socioeconomic inclusion, facilitate collaboration, and achieve long-term cost-effectiveness. It aims to create a supportive and inclusive environment that enables individuals with visual impairments to develop skills, gain employment, and lead independent lives.

Research Questions

1. What are the specific vocational training needs and preferences of individuals with visual impairments in Anambra State, Nigeria?
2. What are the existing challenges and barriers faced by individuals with visualimpairments in

accessing vocational rehabilitation services in Anambra State?

Research Method

This research investigated the inadequate vocational rehabilitation centre for the blind and visually impaired in the South-eastern Nigeria, the architectural solutions and policies to improving the provision of substantial number of vocational rehabilitation centre for the blind. The proposed study will use a mixed-methods approach to explore the feasibility and effectiveness of a vocational rehabilitation centre for the blind and visually impaired in Anambra State, Nigeria. Data will be collected through surveys, interviews, and a literature review. The survey will be administered to individuals with visual impairments and their families, as well as to service providers and stakeholders. The survey will collect information on employment prospects, quality of life, and the perceived need for a vocational rehabilitation centre. The interviews will provide more in-depth information on the experiences and perspectives of individuals with visual impairments and stakeholders. The interviews will be conducted with individuals who have experience with visual impairments, as well as with professionals in the field of vocational rehabilitation. In addition, a literature review will be conducted to identify best practices and design strategies for vocational rehabilitation centres for individuals with visual impairments, with a focus on the principles of sensory architecture. The review will draw on a range of academic and professional sources, including peer-reviewed journal articles, books, reports, and guidelines from relevant organizations such as the American Institute of Architects (AIA) and the Royal Institute of British Architects (RIBA). The data collected from these sources will be analysed using qualitative content analysis and statistical analysis where appropriate. The findings will be used to inform the development of design strategies and recommendations for the proposed vocational rehabilitation centre.

Findings

A recent visit to some of the vocational blind institute located in the Federal Capital Territory, Enugu, and Anambra states revealed a sordid state of affairs. Apart from the commonly identified problems of students not living in decent condition and lacking access to health services or proper feeding, most of the schools' structures could easily be mistaken for abandoned homes left behind by the nation's former colonial masters.

In one of the schools, Basden Memorial Special Education Centre, Isulo, Anambra State, field study further revealed that the visually impaired, the deaf and dumb are forced to share same dilapidated dormitory in the school due to the absence of other structures to serve that purpose, thereby exposing them not only to the risk of missing out from the desired educationbut also at the danger of not being properly protected from neglect and abuse.



Plate 1. A view of Accommodation for the blind in special education centre Oji River, Enugu state
Source; Zeibe Ike (Retrieved August 4th, 2021)



Plate 2. Perspective view of Vocational Hall for the blind in special education centre Oji River, Enugu state
Source; Zeibe Ike (Retrieved August 4th, 2021)



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Plate 3. Perspective view of classroom block for the blind in special education centre Oji River, Enugu state
Source; Zeibe Ike (Retrieved August 4th, 2021)



Plate 4. Perspective view of dormitory block for the blind in basden memorial
Source; Zeibe Ike (Retrieved September 6th, 2021)

Conclusion

In conclusion, the design of a vocational rehabilitation centre for the blind and visually impaired in Anambra State, Nigeria presents a significant opportunity to address the pressing needs of individuals with visual impairments and promote their integration into society. Through an in-depth analysis of accessibility requirements, spatial organization principles, and the integration of sensory architecture, this study has provided valuable insights and recommendations for creating an inclusive and empowering environment.

By incorporating universal design principles, the vocational rehabilitation centre ensures that individuals with varying levels of visual impairments can access and navigate the facility independently. Accessible entrances, tactile paving, and braille signage contribute to a seamless and inclusive experience. Thoughtful spatial organization, grouping related functional areas together and creating clear pathways, enhances efficiency and ease of use.

The integration of sensory architecture elements, such as appropriate lighting techniques, high contrast colours, and tactile and auditory features, further enhances the user experience. These elements not only improve visibility and orientation but also provide important cues for way finding and spatial understanding. Additionally, the availability of assistive technologies, including screen readers and magnifiers, enables individuals to access information and technology, fostering

skill development and vocational opportunities.

The significance of this study lies in its potential to transform the lives of individuals with visual impairments in Anambra State. By implementing the recommended design principles, the vocational rehabilitation centre will serve as a beacon of inclusivity and accessibility, providing a safe and empowering environment for individuals to enhance their vocational skills and reintegrate into the workforce. Moreover, the collaborative approach and ongoing evaluation ensure that the facility remains responsive to the evolving needs of its users.

It is my hope that the findings and recommendations of this study will inform future design practices and inspire further research in the field of architectural accessibility. By prioritizing the needs of individuals with visual impairments and leveraging the power of design, we can create spaces that empower, inspire, and enable all individuals to reach their full potential.

In conclusion, the design of a vocational rehabilitation centre for the blind and visually impaired in Anambra State not only addresses a critical societal need but also embodies our commitment to inclusivity, equality, and social progress. Through thoughtful design, we can create spaces that transcend physical barriers and create opportunities for individuals with visual impairments to thrive. It is my sincere hope that this study serves as a catalyst for positive change and inspires architects, policymakers, and stakeholders to prioritize accessibility and inclusivity in all future design endeavours.

Recommendations

The following recommendations outline key considerations for the design of a vocational rehabilitation centre that caters to the specific needs of individuals with visual impairments. These recommendations have been developed based on an in-depth analysis of accessibility requirements, spatial organization principles, and the integration of sensory and assistive technologies. By implementing these recommendations, the aim is to create an inclusive and empowering environment that promotes independence, skill development, and overall well- being for individuals with visual impairments.

Recommendations:

1. **Accessibility:**
   - Ensure the facility is designed wi
   - Provide accessible entrances, ramps, and tactile paving for ease of navigation.
   - Incorporate braille signage and auditory cues to aid way finding.
2. **Spatial Layout:**
   - Design the facility with a clear and intuitive spatial organization, minimizing obstacles and creating open pathways for easy navigation.
   - Group related functional areas together, such as training rooms, workshops,and counselling spaces, to facilitate efficient use of the facility.
3. **Lighting and Contrast:**
   - Use appropriate lighting techniques to maximize visibility for individuals withlow vision, considering both natural

and artificial lighting sources.
- Incorporate high contrast colours and materials to enhance visibility and distinguish between different surfaces and elements within the facility.

4. **Tactile and Auditory Features:**
   - Integrate tactile elements such as textured flooring or handrails to provide tactile feedback and aid in orientation.
   - Install auditory signaling systems, such as audible cues or voice prompts, toassist individuals in navigating the facility.
5. **Technology and Assistive Devices:**
   - Ensure the availability of assistive technologies such as screen readers, magnifiers, and Braille displays to support individuals with visual impairments in accessing information and technology.
6. **Training and Rehabilitation Spaces:**
   - Design dedicated spaces for vocational training, including workshops and computer labs equipped with assistive technology.
   - Incorporate counseling rooms or areas for individual and group sessions to provide emotional and vocational support.
7. **Outdoor Spaces:**
   - Create accessible outdoor areas that offer opportunities for physical activities, relaxation, and social interaction.
   - Include sensory gardens or tactile pathways to engage multiple senses and enhance the overall experience.
8. **Collaboration and Community Engagement:**
   - Foster partnerships with local organizations, educational institutions, and vocational training centres to provide comprehensive support and opportunities for the blind and visually impaired community.
   - Involve stakeholders, including individuals with visual impairments, in the design and planning process to ensure their needs and perspectives are considered.
9. **On-going Evaluation and Adaptation**:
   - Implement a system for on-going evaluation and feedback from users to continuously improve and adapt the design of the facility to meet the evolving needs of individuals with visual impairments.

By incorporating these recommendations into the design process, the vocational rehabilitation centre can serve as a model for inclusive and accessible environments, promoting the empowerment and integration of individuals with visual impairments into society. These recommendations

provide a holistic approach to design, encompassing architectural, technological, and social aspects that are vital for the success of such a facility.

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