



Exploring The Use Of Architectural Elements To Promote Wellbeing Via Social Interaction In Centers For Autistic Children

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ABSTRACT

Social interaction plays a pivotal role in human life, contributing to mental and emotional wellbeing. Children with a developmental disorder such as Autism Spectrum Disorder (ASD) are presented with unique challenges, particularly in the area of social interaction and due to this fact, the exploration of how architectural elements influence social engagement and overall wellness in the design of spaces for autistic users is essential. In the design of Centers for Autistic Children, architectural strategies incorporated involves sensory-friendly elements, open layouts, quiet spaces, and flexibility to cater to individual preferences. Sensory rooms, outdoor spaces, landscape design and visual supports are integrated to enhance social interactions. This comprehensive approach can be applied to create inclusive and empathetic environments where autistic children can thrive and interact with their peers, ultimately promoting their overall wellbeing. The study aims to explore the use of these architectural elements in promoting wellbeing via social interaction in Centers for Autistic Children. The research methodology applied is the Qualitative research method. The qualitative research procedure adopted in this study is the Case Study Methodology and the findings revealed that the architectural elements incorporated in the design of the case studies carried out played a significant role in enhancing the wellbeing of its users.

Keywords: Autism Spectrum Disorder (ASD), Autistic children, Architectural Elements, Social interaction, Landscape Architecture, Way finding Elements, empathetic environments.

INTRODUCTION

The arrival of a new born child is typically regarded as a joyous event and is celebrated by the family and those close to them. This is followed by the start of the child's physical and mental growth and development. However, when the child begins to display certain abnormal behaviors such as lack of eye contact, withdrawals, repetitive behaviour and difficulty with social interactions and communication, it is very likely that he or she is suffering from a developmental disorder or disability.

Developmental disabilities according to the United States of America Centers for Disease Control and Prevention (CDC) are a group of conditions due to impairment in physical, learning, language or behaviour areas. They are called developmental disabilities because they begin during the child's developmental period and usually have a lifelong effect. Children suffer various kinds of developmental disorders which include but is not limited to Mental Retardation, Learning Disability, Attention Deficit Hyperactive Disorder (ADHD), Cerebral Palsy and Autism Spectrum Disorder (ASD) (U.S CDC, 2014). Autism, also known as Autism Spectrum Disorder (ASD), as listed above is one of the most common lifelong developmental disabilities affecting children around the world. According to the World Health Organization (WHO) Autism Spectrum Disorder are a diverse group of conditions that are characterized by some degree of difficulty with social interaction and communication. . It is a developmental disability that manifests in the form of atypical social behavior, language development,

and interests (World Health Organization, 2019). Autism Spectrum Disorder is a complex and heterogeneous disorder with qualitative impairments in social and communication skills, rigid and obsessive interests and a range of sensory difficulties (APA DSM-V, 2013). It can be a minor problem or a disability that needs full time care in a special facility as impact of these behaviors can range from mild to disabling. Autism affects all races, ethnic groups and socioeconomic levels, the exact cause is unknown and there is no cure for it.

Overall, the global estimate autism prevalence in 2010 was 14.7 per 1 000 (1 in 68) children age 8 years in America (US CDC, 2014). It has been established that autism varies in gender and race. The prevalence was 18.4 per 1 000 (1 in 42) among the males and 4.0 per 1 000 (1 in 189) among females (U.S, CDC, 2014). In Nigeria, 1 per 125-150 children is living with autism. This amounts to about 600,000 Nigerian children (Lesi *et al.*, 2014).

More children are diagnosed with autism more than ever before. But the latest numbers could be higher because of changes in how it is diagnosed not because more children have the disorder. Upon diagnosis, it is imperative to provide children with ASD with quality services to help them overcome their disabilities and live a productive life. Research has shown that early diagnosis and intervention can have a significant impact on outcomes for children with ASD (Dawson *et al.*, 2010). The difficulties faced by these children living with autism and the burden experienced by their parents and loved ones can be greatly relieved by the availability of an adequately equipped children's autism center. Early intervention is an important service that has helped to reduce abnormalities in behaviors found in children with ASD (Montes, Halterman & Magyar, 2007).

A Centre for Autistic Children is a specialised facility dedicated to providing comprehensive assessment, diagnosis, treatment and support services for children on the autism spectrum. There are a few privately owned ASD centers or healthcare facilities in Nigeria that cater to the needs of children with ASD. These facilities are not well accustomed to the creation of adequate spaces to ensure the total wellbeing of children living with this disorder. Architectural elements such as Landscape architecture and way finding tools are not well utilized to promote social activity and well-being of children on the spectrum. The use of a sensory garden as a Landscape architecture tool is a powerful strategy that can enhance social interaction and activity. According to Hazreena Hussein's (2014) study, the sensory garden is a space for children to play and explore outside through physical mobility, social skills and sensory stimulation among children with special needs. Similarly, Blakesley, Rickinson and Dillon (2013) in their study titled *Autism Students' Involvement Through Nature Environment*, argued that outdoor learning involvement for autism children through environment proved beneficial activities for autism children including gardening and horticultural activities, landscape design, summer camps, physical exercise, farm experience, animal therapy and live experience through the environment. This study was also supported by Blakesley and Payne (2012) that learning outside through the natural environment enhances better understanding and provides a direct experience for children with autism. Therefore incorporating natural elements such as water features, plants and natural lighting can help create a calming and peaceful environment for children with ASD. The study aims to explore the use of these architectural elements in promoting wellbeing via social interaction in Centers for Autistic Children.

METHODOLOGY

Qualitative research method was adopted, where an extensive literature review was conducted to shed more light and provide a background information on the benefits of architectural elements in enhancing social interaction among children with autism. Case studies are suitable for exploring issues that are too complex for empirical survey or experimental research. It is most appropriate when a how or why question is being asked about a phenomenon (Yin, 2009). For the purposes of this research, case studies were also conducted with the aim of identifying the architectural elements employed in these designs.

FINDINGS

From the local case studies carried out, it was observed that the application of architectural elements that encourage social interaction to promote wellbeing such as landscape design and way finding tools were grossly limited; there were shortcomings in the incorporation of natural elements such as trees, shrubs and green life. Although, there was a presence of outdoor spaces designed for the purpose of

play and relaxation for the children, it was still not adequately designed to fit their needs. Way finding elements such as visual clues, signage and symbols are non-existent. This can lead to confusion which may result in panic and anxiety attacks. Clear zones for different activities such as therapy rooms, play areas, classrooms etc., were not probably defined. Some of the local case studies did little to provide sensory spaces for autistic children to calm down when they feel overwhelmed. Below is a summary of the local case studies.

Hope Center Inclusive School, which is situated at Talent Academy Street, Byhazin, Kubwa, Abuja. The Centre was established by the Daughters of Charity Hospital to cater to the needs of children with developmental disorders of which autism is included.



Plate 1: Approach view of Hope Centre Hope Centre

Source: Researchers field work, April 2023



Plate 2: View of the Classrooms with courtyard at Hope Centre

Source: Researchers field work, April 2023

J.K.S Centre for Children with Special Needs which is located at Phase IV, Kubwa, Abuja. This Centre for children with special needs was established in 2010 to cater to the needs of children with neurological and developmental disorders such as Autism, Cerebral Palsy, Dyslexia, Down syndrome, etc.



Plate 3: Approach view of J.K.S Centre Centre

Source: Researchers field work, April 2023



Plate 4: Physiotherapy room at J.K.S. Centre

Source: Researchers field work, April 2023

O.L.G. Foundation Health and Autism Centre which is located at L.E.A. Primary School, Alex Ekwueme way Opposite Oando filling station, Jabi, Abuja. The Centre was established by Our Lady of Guadalupe (O.L.G) Foundation to cater to the educational and medical/psychological needs of children

with autism. The structure used for the Centre was leased to the Foundation by the government as the building constitutes part of the LEA Primary School buildings located in Jabi.



Plate 5: Approach view of O.L.G. Foundation Health and Autism Centre

Source: Researchers field work, April 2023.

The Role of Architectural Elements in the Design of Centers for Autistic Children.

Architects and designers are increasingly incorporating elements that are conducive to social interaction into the design of centers for autistic children. Here are some key architectural elements that are being used to promote social interaction and wellbeing:

i. Incorporation of Natural elements and Landscape Architecture

The importance of natural elements and landscape architecture as a means to foster social interaction among children with autism cannot be overstated as it is essential for their wellbeing. These simply means using elements in nature such as plants and green areas in the design of outdoor spaces like play areas and sensory gardens. A sensory garden focuses on stimulating several bodily senses which include touching, smelling, hearing, seeing, sometimes taste, as well as body awareness and balance (Wagenfeld, 2009). The use of a sensory garden aids in reducing stress for children in settings such as schools or day care centers (Flick, 2012). It should also encourage play amongst the children as this is significant to their overall development. Play can be especially beneficial for nonverbal children wanting to communicate with others (Ginsburg 2007). Children who are exposed to greener outside environments are also more likely to demonstrate less aggression and mental stress (Cooper, 2015). While relieving stress and energy, children can use this opportunity to engage in learning experiences with their surrounding environment and peers. Children that interact with each other in an inclusive outdoor environment can be exposed to more learning experiences (Beattie, 2015) Play promotes the social, cognitive, physical, and emotional well-being of children with and without disabilities.

Sensory gardens also provide children with learning opportunities while interacting with nature. Hussein (2010) suggests that sensory gardens promote exploration and learning which leads to improved educational and social development in the classroom for children with and without disabilities.

ii. Open spaces

For a design such as this which aims to improve social interaction and wellbeing, open spaces featuring comfortable seating arrangements should be incorporated into the design as it will help facilitate face-to-face interaction and encourages mingling. Communal areas such as indoor play areas, outdoor playgrounds and gardens provide opportunities for spontaneous interactions. Also, the strategic placement of sensory spaces and quiet rooms are vital for the purpose of calming down when the child feels a sensory overload. Outdoor environments provide several opportunities for children to develop new skills and reach milestones. In a safe environment, children can challenge themselves and take healthy risks which leads to improved self-confidence and higher self-esteem (Gill, 2014). With higher self-confidence and self-esteem children can lead healthier lives.

iii. Way finding Elements.

The inability to find one's way in a location whether familiar or unfamiliar can be frustrating and stressful for a person with no developmental disabilities. For an autistic child with these neurological challenges, it is much worse. This inability to navigate the environment can lead to an unpleasant "episode" or an incidence which may manifest as a panic attack or an anxiety attack. This can be remedied by implementing architectural elements such as clear way finding visual clues and spatial orientation. Way finding for autistic children involves clear and consistent signage. Visual clues can help children understand where they are and where they need to go. These visual clues should be recognizable symbols and consistent colour coding to convey information. Visual aids such as color and pattern are employed in circulation areas to assist way finding. This is done discreetly to avoid visual over-stimulation. Conventionally dependent primarily upon the written word, signage is a challenge for communication-disordered individuals like those with autism. It has been found that individuals with autism, although sometimes unable to communicate with conventional language of the spoken and written word, can communicate well using pictures (Grandin, 1996). This concept can be applied to signage schemes where pictorial language can be displayed in parallel with written language. In addition to assisting navigation, this reduces anxiety and promotes independence. It will also help them develop skills as well as raise self-esteem and encourage inclusion (Mostafa, 2014). Various colors and themed symbols are used to indicate different functions in the school. In a manner similar to pictorial signage, textural signage is proposed as a communicative tool capitalizing on the tactile, in addition to the visual, cognitive capabilities of the students. Various textured materials are also used to indicate circulation areas, changes in levels and for the creation of interesting sensory experiences, particularly in outdoor learning environments (Mostafa, 2014). When this is successfully achieved, it will positively influence the child's wellbeing. A number of studies suggest that the complexity of floor plan configurations has the greatest influence on way finding and perceived legibility (Haq & Zimring, 2003; O'Neill, 1991b). Symmetry, regularity, and continuity are among those qualities of good form seen as relevant (Canter, 1974).

iv. Sensory-Friendly Design:

Autistic children often have heightened sensory sensitivity. Designing spaces with muted colors, soft textures, and sound-absorbing materials can create a sensory-friendly environment that reduces sensory overload and encourages socialization. One study found that the most effective element promoting inclusion was safety surfacing, such as bright colors used for identification on pathways and equipment. The coloring is used to help children see more clearly what certain play areas are used for and where they should probably take caution (Dunn & Moore, 2005). Auditory stimulation is also important to include within a playground setting. Not all children respond well to loud noises, so musical equipment should be dispersed throughout the playground to reduce the amount of sounds in one location. Also, high-pitched sounds can be uncomfortable for those with auditory oversensitivity, so musical instruments that produce low tones should be chosen for the playground (Shapiro, 2006). Incorporating multi-sensory rooms with interactive elements like colored lighting, bubble walls, and tactile surfaces can engage children's senses and encourage social interaction through shared sensory experiences.

Several centers for autistic children have successfully integrated these architectural elements to promote social interaction and wellbeing. The Northern School for Autism, Australia, Thomas Bewick Autism School, Newcastle, UK and The Norton Children's Autism Centre are examples of autism centres that incorporate sensory-friendly design, open spaces, and sensory gardens to create an environment that supports social interaction. The presence of a well landscaped environment and natural elements are not in short supply. The playgrounds and sensory garden are well maintained and secure. In the Outdoor areas, a range of activities and equipment are available for the children and they include swing sets, sandpits, shaded seating and grassed game playing areas. Also, this facilities made use of way finding elements in its design which helps foster easy transition and movement from one space to another.



Plate 6: Aerial view of the Centre
Source: <http://www.northernautism.vic.edu.au>



Plate 7: Approach view of the Centre
Source <http://www.northernautism.vic.edu.au>.



Plate 8: Aerial view of the Centre
Source:<http://www.thomasbewick.newcastle.sch.uk>.
Source:<http://www.thomasbewick.newcastle.sch.uk>.



Plate 8: Approach view of the Centre



Plate 8: Approach view of the Centre
Source:<http://nortonchidrens.com>.

CONCLUSION

In the culmination of our exploration into the intersection of architecture, well-being, and social interaction in centers for autistic children, a profound understanding emerges—a realization that the built environment plays a pivotal role in shaping the experiences of individuals with autism spectrum disorder (ASD). Through a nuanced examination of architectural elements, spatial design, and their impact on social interaction, this article underscores the transformative potential of thoughtful design in enhancing the well-being of autistic children. The fusion of architectural ingenuity and a deep understanding of the unique needs of individuals with ASD opens doors to a realm where spaces are not merely physical constructs but dynamic facilitators of social engagement and emotional well-being. Our journey into the world of architectural interventions reveals the nuanced ways in which sensory-sensitive design, adaptable spaces, and communal areas can create environments conducive to positive social interactions among autistic children.

As we conclude this exploration, it is evident that the fostering of well-being in centers for autistic children requires a holistic approach—one that transcends conventional notions of architecture. The integration of sensory-rich spaces, calming environments, and areas designed to encourage social connections offers a promising avenue for architects, designers, and caregivers to collaborate in providing tailored solutions for the unique challenges faced by individuals with ASD. The call to action resonates: let us continue to push the boundaries of architectural innovation, acknowledging that the built environment has the power to influence not only physical surroundings but also the social dynamics within these spaces. By embracing a human-centric, inclusive design philosophy, we can create centers for autistic children that not only meet their specific needs but also serve as nurturing hubs where social interactions flourish, contributing to the overall well-being of every child in their care. In doing so, we embark on a journey toward a more compassionate and understanding world—one where architectural elements become catalysts for the promotion of well-being and positive social experiences for individuals with autism.

RECOMMENDATIONS

Landscape design:

A strategy that can be applied to ensure that children with autism interact with their peers easily is the design of a well landscaped environment that will encourage play and social interaction. Children with autism tend to benefit from exposure to natural environments. The inclusion of outdoor spaces with play elements is necessary to promote play among the children

Organized and structured spaces:

This simply involves establishing clear zones for different activities such as therapy rooms, quiet spaces and communal areas. Keeping the environment structured provides a sense of predictability and reduce anxiety and should be incorporated in the design of an Autism Centre.

Sensory Spaces:

These spaces include sensory rooms that are designed to provide a calming environment, with soothing lighting, soft surfaces and interactive installation such as swings, hammocks, etc. This can help children with autism feel more comfortable in social situations.

Accessible Layout:

Children with autism can benefit from a clear layout that promotes a sense of safety and security. This can be achieved through the use of clear sightlines defined pathways, designated quiet spaces and way finding visual cues. This can help reduce sensory overload and promote social interaction therefore, the importance of an accessible layout must be highlighted.

Special Care Givers

The role of caregivers and volunteers in promoting social interaction among children in centres for children with Autism should be emphasized, and efforts should be made to recruit and retain qualified personnel.

Interaction outside the Autism Community

The importance of social interaction for the well-being of children in centres for children with Autism should be highlighted, and efforts should be made to involve the wider community in supporting and promoting such initiatives.

Support From the Government and NGOs

The government should play a more active role in supporting and advocating for people with ASD. Government and non-governmental organizations should allocate more resources towards improving the psychological conditions and social support structures for autistic children.

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