

## ARCHITECTURAL BARRIERS TO PEOPLE WITH DISABILITIES IN NIGERIA TERTIARY INSTITUTIONS: A CASE STUDY OF JOS

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### ABSTRACT

*The architectural design of most tertiary institutions in Nigeria does not put into cognisance the needs and requirements of the people with disability thereby, becoming a greater barrier to such people. This study examined the basic architectural barriers that stand as obstacles to making people with disability adaptable to the academic built environment. The disabled, within the academic environment have to be assisted to transverse physical barriers such as; changes in levels, access to facilities and circulation space within buildings. The paper suggests the incorporation of the disabled requirements into the norms of planning and design policies. Emphasis should be placed on providing a clear, obstruction-free, level and wide path for the convenience of all users of the academic environment.*

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### INTRODUCTION

The disabled (physically challenged) people are faced with systematic barriers that reduce their opportunities for equality and participation in the built environment. In 1975, the number of disabled people in the world was estimated at 12.3 percent of the total population (Hurst, 1987). As a result, a significant portion of these people are at risk of being excluded from the learning environment due to architectural barriers and other man-made barriers.

Architectural barriers to people with disabilities are all about obstacles to their free movement and accessibility which arise as a result of neglect in the requirements of the disabled in the design process (Davenport 1996). The major barrier to the disabled in Nigeria tertiary institutions is the issue of accessibility, which hampers movement and safety. According to Beckman (1976), an environment that prohibits some individuals from mobility is in itself a disabled environment. As such, every living environment is to be suitable for all of the individuals living within it. People with physical or learning disabilities can be excluded from achieving their educational goals or opportunities when the learning environment is not designed according to their standards and requirements. There is therefore, a need to put in conscious effort towards providing a barrier free environment for the disabled people to increase their mobility, accessibility and independence, so that, their ability to work and study will be greatly enhance and revitalize.

People with disabilities, although have been the object of discrimination (socially, politically and educationally) for centuries; they have also proven to have important contributions to make to our socio-economic growth (Ann and Derek 1979). Today, little is



been done to educate the disabled as a result of certain difficulties they faced within the built environment. How can the disabled fit into the society without being educated? And how can they be educated when the environment is not designed to accommodate them? The campaign therefore, to provide people with disabilities equal opportunities to educational facilities for professional growth and development calls for action on several fronts such as; making programmes of education accessible to them and facilitating structural changes in environmental design by the removal of architectural barriers.

The United Nations (1981) in their world programme of action concerning the disabled persons defined disability as "a function of the relationship between disabled persons and their environment". All forms of abnormalities constitute a barrier to the individual, preventing him/her from performing the role that is normal and expected of him/her by the society. However, this paper does not cover all the requirements of disabled people in details. For the purpose of this study, the targeted groups to be put into consideration are; the wheelchair users, people with limited walking abilities, the sightless and partially sighted and the hearing impaired. Other categories might include people susceptible to physical fits and functional disabilities of the arm or hand.

This study is aimed at raising the general level of expertise of/and to stimulate interest in accessibility issues and other architectural barriers among professionals who influence the shape and role of the built environment. It is also aimed at the complete integration of people with disabilities into the academic life of the society. There is a need to provide various facilities required to ensure that people with disabilities have opportunities of becoming productive and better members of the built environment. This can be achieved by creating a better understanding of their needs and appreciating their capabilities. This will go a long way to encourage them to attend schools through the identification and elimination of the barriers that have hindered many from achieving and attaining educational status in the society.

### **ARCHITECTURAL BARRIERS TO THE DISABLED**

Architectural barriers to the disabled are obstacles, which affects or hampers their access to the various architectural designed systems within the built environment. The most common problem faced by the disabled within the built educational environment is physical accessibility. Physical accessibility means that a person is able to approach, enter, pass to and from, and make use of an area and its facilities without assistance (Lacey 1999). It is most frustrating for people with disabilities to find that architectural barriers in buildings and facilities supposedly created for the public prohibit their full participation in normal situations of life. The existence of standards for accesses is crucial to the elimination of architectural barriers as this will enable the requirements for access to be identified and taken into consideration at the initial planning and design stages of a new building (Davenport, 1996).

Students with disabilities are supposed to be able to make their way around facilities with the same degree of comfort, ease and safety as experienced by other persons and to have equal opportunities to participate in educational activities and be as independent as



possible within the framework of particular abilities. Public access should be a right and not an option in the design of the built environment.

According to Davenport (1996), architectural barriers affect two major areas of disabilities.

These are: -

**Physical** (including people on wheelchairs, people who are ambulant and people with manipulative disabilities.

**Sensory** (Vision and hearing)

## **METHODOLOGY**

This study was based on a random selection of two tertiary institutions in Jos, viz: University of Jos, and Plateau State Polytechnic, Jos campus. The work deals with the analysis of the data sourced from the above named institutions adjudged to be architectural barriers within their environmental setting. Field survey was carried out to identify what can be said to be architectural barriers within the environmental setting of these institutions and how they affect the free movement of the disabled. The research approach adopted is the descriptive analysis of photographs taken of the architectural barrier elements. The material for this study is a combination of field data arising from the assessment of the institutions and some extracts from technical report. In each case, reference is made to standard design guidelines for people with disabilities.

## **ANALYSIS OF ARCHITECTURAL BARRIERS - CASE STUDY OF UNIVERSITY OF JOS**

This institution is made up of eight faculties in two different locations. The Bauchi road main campus has six faculties (Education, Environmental sciences, Law, Medical sciences, Pharmaceutical sciences and Natural sciences) and the administrative buildings. The other two faculties (Arts and Social sciences) are located at the permanent site campus.

### **Building Types and Accessibility**

- The administrative building is a low rise single storey office block without an elevator. The ground level which is supposed to be accessible to people with disabilities has narrow corridors which make it difficult for wheelchair manoeuvring and easy circulation.
- The building housing the faculties of Arts and Social sciences is a multi storey building without any provision for an elevator (See figure 1). The absence of the elevator creates a barrier for wheelchair users and people with limited walking or manipulative abilities.
- Class rooms have fixed seating and provision not made for the needs of those in wheelchairs (See figure 2). The requirement for wheelchair users in a lecture room is the provision of flip-up armrest chair at row ends to have variety of seating and viewing location.
- There are no provisions for anti-glare filters or blinds in the lecture rooms. This affects those with impaired visions (See figure 2).
- Sanitary fittings do not provide for ease of use by the disabled persons. Spaces provided as conveniences do not allow for full-turn manoeuvring of wheelchairs and the fixtures are not within easy reach (See figure 3).



- There are no complimentary ramped route at stepped accessible path and where change in level is unavoidable (Figure 4). Where ramp and a stair are provided, handrails are not installed for ease of movement (Figure 5). Where handrails are not installed on both sides of a stair, people with limited walking abilities and the sightless would find it difficult to use (Figure 4 and 5).
- Most ramps are not adjacent to stairs at change in levels (Figure 6).
- Most entrances to facilities are not accessible to ambulant disabled persons and the wheelchair users (Figure 7).
- Building entrances are not provided with minimum entrance landing (Figure 4).
- Corridors width does not allow for maximum manoeuvring in 180-degree turn especially in toilet areas (Figure 8).
- The overhang obstacles within corridors are mounted below the minimum height of about 2000mm.

### **The Environmental Setting**

- The main parking space is located at some distance from most of the building facilities. This does not facilitate independence and mobility of the disabled persons.
- There is no parking space that is designated solely for the disabled.
- Accessible pathway surfaces are not smooth and even (Figure 9).
- Curb ramps are not provided at sidewalks or pathways crossing which also lack landing for wheelchair users.
- Drive way crossings are provided without curb ramps and landing.
- There are no tactile surfaces as detectable warnings for the visually impaired.
- Gratings are placed along pedestrian pathway which is hazardous to wheelchair, cane and crutch users (Figure 10).
- Guards are not used to separate pathways from planting areas which can be an obstruction along path of travel (Figure 11).
- Obstacles such as direction or warning signs are found as elements in the path of travel. This obstructs the free flow of especially the sightless or people with limited vision (Figure 12).



**Figure 1. Faculty of Social Sciences Building**



**Figure 2. A Lecture Room**





Figure 3. Toilet

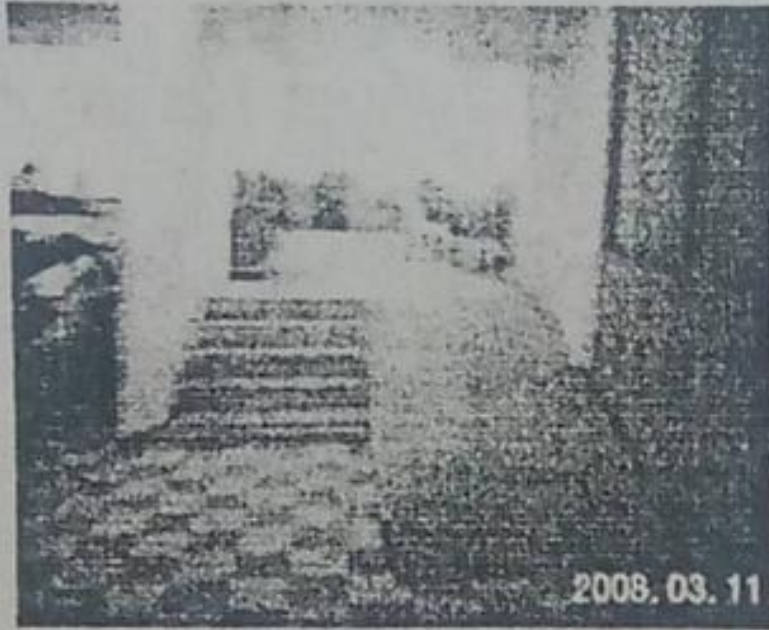


Figure 5. Ramp adjacent to Stair

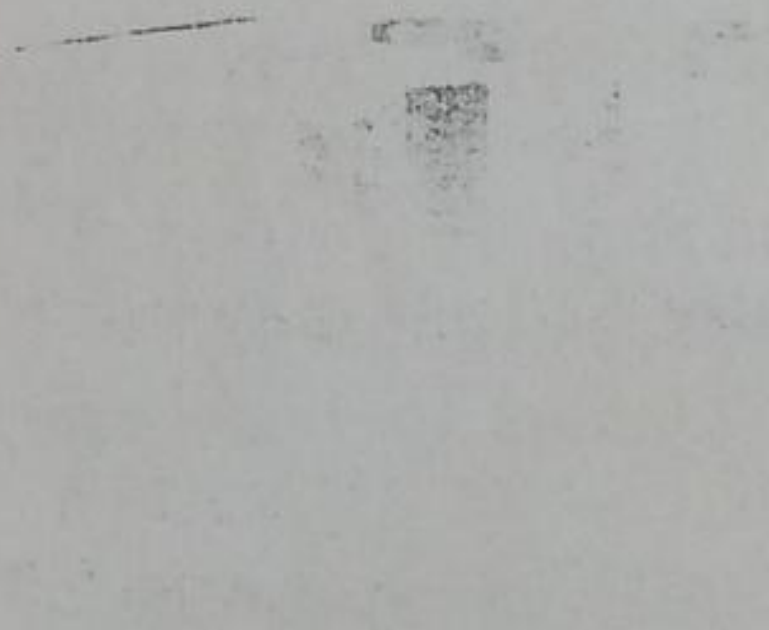


Figure 7. Building Entrance



Figure 9. Pathway



Figure 11. Shrubs



Figure 4. Building Entrance



Figure 6. Ramp without Handrails

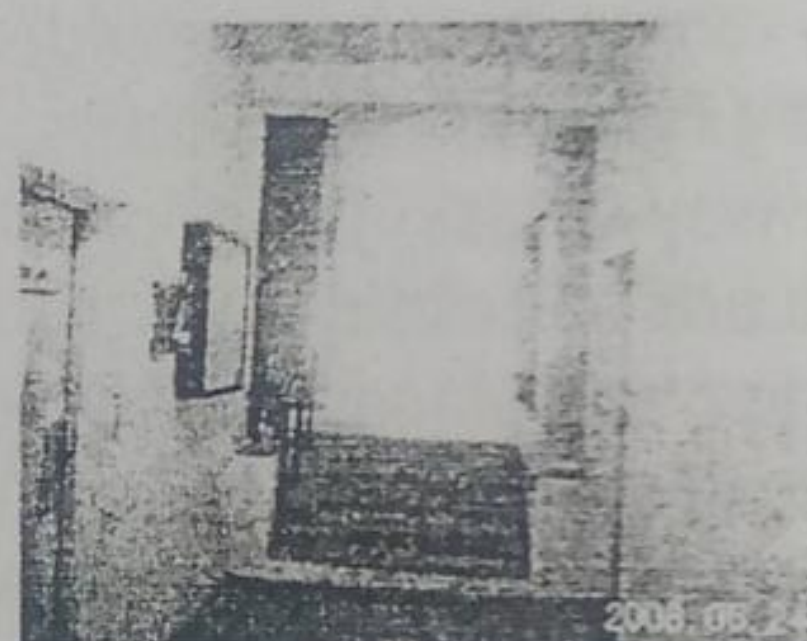


Figure 8. Corridor



Figure 10. Gratings



Figure 12. Warning Sign



## **ANALYSIS ARCHITECTURAL BARRIERS - CASE STUDY OF PLATEAU STATE POLYTECHNIC, JOS CAMPUS**

The Jos campus of the Plateau State Polytechnic has school of administration and general studies with more than ten (10) departments. The planning of the facilities of this institution generally does not put into considerations the needs of people with varying disabilities. There exist no standards for accesses which is crucial to the elimination of architectural barriers in any environmental setting.

### **Building Types and Accessibility**

- The main lecture hall is a multi-storey building which lack accessible entries for wheelchair manoeuvring even at the ground floor (Figure 13).
- Other building facilities on only one floor have problem of circulation where steps are located without consideration for ramps (Figure 14).
- The buildings design do not allow for easy access of people with disabilities as evidence in the lack of ramps and handrails at changes in levels (Figure 14).
- There are no complimentary ramped route at stepped accessible path and where change in level is unavoidable (Figure 15).
- Corridors width does not allow for maximum manoeuvring in 180-degree turn (Figure 26)
- Spaces within toilets are inadequate to allow for wheelchair manoeuvring (Figure 17).
- The lecture rooms lack anti-glare filters and audio and visual feedback for individual with hearing or visual impairment.
- There is high amount of light within lecture room space which affects the visually impaired (Figure 18).
- Grab rails are not provided at elevated platforms more than 400mm (Figure 14).
- Steps for access to some of the building facilities are position in places where it will be difficult for the visually impaired to locate (figure 14).

### **The Environmental Setting**

The design of the outdoor environment of the institution did not put into consideration the design requirements of open spaces and pedestrian routes. This generally isolate and segregate, individual with disabilities.

- The parking spaces are not defined which conflict with pedestrian routes. The spaces have not been properly organized to create a control environment for both the disabled and the abled persons (Figure 19). Lack of coordinated landscaping pose a serious trait to the accessibility issue of people with disabilities.
- Paved sidewalks or pathways are absent which create a problem of easy access of especially wheelchair users (Figure 13 and 19).
- Access features do not provide good orientation cues for pedestrians with visual impairment.
- Planting materials are located on the path of travel of pedestrian which are obstacles to the free movement of the visually impaired (Figure 20).





Figure 13. Main Lecture Halls



Figure 14. Lecture Hall



Figure 15. Stepped Pathway

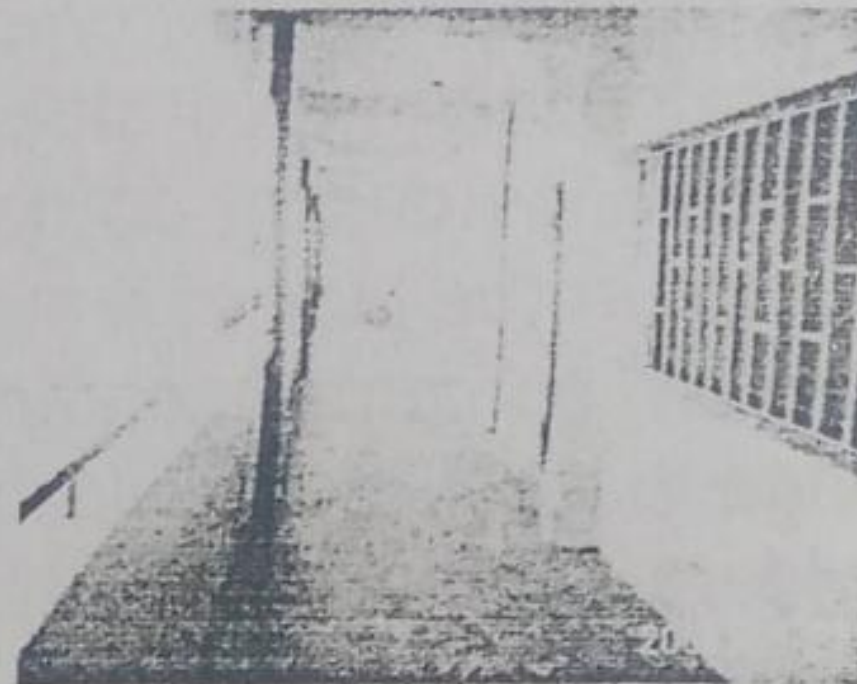


Figure 16. Passage



Figure 17. Toilet

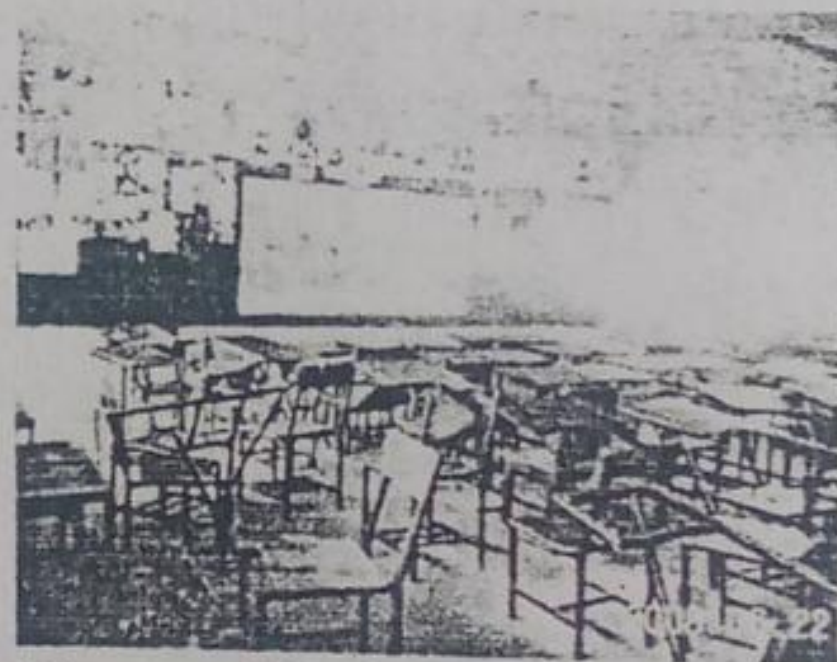


Figure 18. Lecture Room



Figure 19. Parking Space



Figure 20. Shrubs

### **APPRAISAL OF THE FACILITIES**

The major aim of any facility within the environmental setting is to be accessible for all categories of users, but many factors militate against achieving the accessibility issue in these tertiary institutions studied. Spaces within these institutions necessary to achieve



interaction are not properly organized to allow the free movement of persons with disabilities. This is evident in both case studies.

Circulation creates a problem where steps are located without consideration for ramps. Where ramps are provided, handrails are not installed for ease of movement. People with limited walking abilities and the sightless find it very difficult to use stairs and ramps provided without handrails. Corridors are not wide enough and not properly organized to create a controlled environment to reduce the problem of wheelchair manoeuvring.

The design philosophy of an all encompassing environment is a one which encourages and support personal care habits, social contact and free movement for all users - an environment without accessibility problem. Architectural design of public facilities should therefore allow the users to have some degree of independence.

### **CONCLUSION**

From the analysis of the architectural barriers in these tertiary institutions, it is evident that the requirements of people with disabilities were not incorporated at the initial design stage. The major obstacles or barriers to the free movement of the disabled persons in these institutions are vertical changes in levels, narrow corridors, steps or stairs without handrails, slippery surfaces, and obstructions within path of travel, inadequate circulation spaces and glare.

These obstacles affect mostly the wheelchair users, people with manipulative abilities and those with impaired vision and hearing. The removal of these architectural barriers in tertiary institutions will increase the opportunity of people with varying disabilities to become productive and better members of the built environment. This study and the adaptations that resulted from it are technical in nature and as such, cannot solve the much complex problems of integrating in totality people with disabilities into the academic environment completely. However, it can serve as a contribution towards finding a solution to the architectural barriers within tertiary institutions.

### **RECOMMENDATIONS**

A responsive architectural design is the one that anticipate both the requirements of the abled and disabled people within a given setting. The provisions for people with disabilities would create a better and safer environment for the able-bodied people. Also, design that accommodates people in wheelchairs will also benefit most other people with disabilities. There is therefore a need to design vertical and horizontal accesses to facilities to be within the reach of people with disabilities.

- The minimum standards for accesses should include design requirements for walkways, ramps, landings, rails, circulation spaces at door ways, sanitary facilities and hearing augmentation among other things.
- The design of lecture rooms should take into cognisance need of those in wheelchairs by making provisions for them at row ends and the design of windows should be such that it will counter the problem of glare and reflection. Also, the provision of anti-glare filters such as blinds or curtains within the lecture rooms could reduce the problem of glare and reflection.



- Physical planning laws of institutions of learning should incorporate the requirements of the disabled persons into the norms of planning and design policies. There is also a need for the government to respond positively to the needs of people with disabilities by establishing a transition plan as an act or a bill of government to ensure that the environmental setting of educational facilities are physically accessible to the disabled.

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