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Adequacy of disabled facilities in university buildings: The case of University of Cape Coast - Ghana

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Abstract

The aim of this exploratory research was to examine the extent to which the Persons with Disability facilities have been incorporated in the designs and construction of State university buildings in Ghana. To achieve the study's objectives, a comprehensive literature search, interviews, personal observation and a survey was carried out in the University of Cape Coast in Ghana. Findings from the research show that the buildings constructed on this university campus are not totally disability-friendly. It was found that facilities such as main entrances to auditorium/lecture hall, ramps, and staircases were not readily accessible to Person with Disabilities. Fittings, such as directional signs, underfoot warnings, Braille texts, seats and space for wheelchairs users were inadequate or virtually absent in most of the buildings. The study concluded that university authorities and those in charge of design and construction of buildings for universities and the law enforcement agencies should ensure that all buildings to be designed and constructed on the university campus are disability friendly in order to accommodate disabled persons.

Keywords: Disability-friendly; Facilities; Ghana; University

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1. Introduction

The passage of Persons with Disability Act in 2006 in Ghana makes it mandatory to put up public buildings that are disability-friendly. Despite the passage of the Persons with Disability (PWD) Bill, by the parliament of Ghana and the provisions made in the 1992 constitution on the rights of disabled persons, little has been done on the provision of access for people with disabilities in public buildings in Ghana (Danso et al, 2011). Design and construction of buildings in most cases have not been given consideration to making public buildings easily accessible to the disabled people in Ghana. According to Owusu and Owusu-Ansah (2011), many private and public buildings like residential flats or apartments, shopping centres, office buildings, medical clinics and hospitals, schools and universities, recreational centres and athletic stadia, government buildings and houses of worship are without mechanisms like ramps, lifts, and escalators, directional signs, underfoot warning, Braille texts, seats for wheelchair users, etc. This act of discrimination has continually deprived disabled persons their fundamental human rights in the field of planning and resources allocation (Wellington, 1992). It is against this background that some pressure groups in Ghana advocated for the passage of the Disability Bill into law in June 2006.

The needs of the disabled persons are as important as the needs of the physically-able majority. For this reason, planning and designing for the majority should take into account the requirement of PWDs (Uslu, 2008). Wylde et al. (1994) reports that as many as 9 out of 10 individuals may be architecturally disabled in some way or other at some time in their lives. This implies that we are all disabled at one time or other in our lives. For instance, a child, a pregnant woman, an injured person, an elderly person, a parent with a pram, etc, are all disabled in one way or the other. There are very few people who remain able-bodied and healthy all their lives. It is, therefore, important that the built environment, which includes public buildings are made barrier-free by appropriately designing, constructing and maintaining them to meet the needs of all users equally (Baris et al., 2009).

The principles of inclusive design aim to accommodate the broadest range of bodily shapes, dimensions and movements, in the belief that designers and manufactures should ensure that buildings, products and services address the needs of the widest possible audience. The need for making the built environment barrier-free is so important that Peel et al. (2009) advanced five arguments for its implementation. These are:

- a moral argument that access to the environment is a basic human right and that there is a moral obligation to tackle the barriers and obstacles to creating and sustaining an inclusive environment;
- a sustainability argument that adaptable and flexible buildings and environments are better able to accommodate the changing needs of society and individuals;
- a professional argument to operate within equal opportunities frame work as required in professional codes of conduct;
- an economic argument that excluding individuals from the workplace and/or market, and costly post-hoc design solutions do not make business sense, and importantly,
- legal arguments enshrined in statutory instruments.

In section 6 and 7 of the PWD ACT 2006 (ACT 715) under the rights of persons with disability, provisions are made for access to be provided to public places and public services respectively. It is regrettable that design and construction of buildings in most cases have not been given consideration in making public buildings easily accessible to the disable people in Ghana.

1.1. Purpose of the paper

The aim of this paper is to find out whether disabled people are properly or adequately factored in the design and construction of university buildings.

1.2. The objectives of the study

To achieve the needed results, the following objectives were set:

- To identify whether Disability facilities are factored into the design of public university buildings in Ghana.
- To ascertain the type of disabled facilities incorporated in the design and construction of university buildings and its adequacy.

2. Review of literature

2.1. Inclusive design of public buildings

By the United Nations standard, all work areas in which PWDs may be employed should be accessible (Ansah and Owusu, 2012). They should accommodate a wide range of ancillary aids and be able to support interactive usage (ibid). For many years in Ghana, "PWDs" have been discriminated by the way buildings are designed and built. Both private and public buildings as well as other facilities and infrastructure were built without recourse to the needs of the PWDs in the society. Although Ghana has gone through a lot of transformations in terms of general building construction such as residential, commercial and institutional buildings before and after independence from the British in 1957. A cursory look at development of Buildings in Ghana, obviously, shows that with these transformations, the design and construction of most of these buildings did very little to consider PWDs in the Ghanaian society (UNICEF, 2000).

Wylde et al (1994) intimate that only 10% of individuals may not be architectural disabled in one way or other at some time in their life. For this reason, it is imperative that the built environment is properly designed and made all inclusive. Imrie and Hall (2001) have identified four assumptions within the construction industry that currently prevent the built environment from being designed in such a way as to reduce architectural disability. These are:

- Low demand among disabled people to justify providing a more accessible built –environment;
- That, it is unreasonably costly to provide environments that are fully accessible;

- That, meeting the needs of wheelchair users is sufficient to meet the needs of all disabled people, and
- That accessible environment can be provided by specifying technical design solutions without there being any corresponding change in social attitudes, values or practices.

These assumptions are half-truths and can be disproved if one considers the fact that:

- Over the last few decades or so, disabled persons have increasingly campaigned for an end to their exclusion from a range of social and economic opportunities (Imrie, 1997). Secondly, since we are all likely to be disabled at one time or the other in our lives, designing for the disabled will mean designing for the broader society which increases the demand for such designs.
- In terms of cost, one could argue that inclusive design can be financially beneficial, in that, in most cases, universal design elements can be added to a product's design for little or no cost. It must, however, be admitted that, in some situations, designing for everyone may include features that cost more than traditional designs. It also leads to decrease in modification and compensation costs since traditional designs that limit people's ability to work, live, or function independently in their environment can increase costs for individual employers and the broader community by requiring special modification and accommodation (Vandebelt, 2001).
- There are many types of disabilities and so designing for PWDs goes further than designing only for wheelchair users.
- Designing for PWDs also goes beyond just specifying technical solutions without paying attention to the social aspects. For instance, inclusive design means designing for everyone, without stigmatizing or excluding particular groups or individuals. This is part of society's ethical responsibility to create inclusive and caring communities. It allows everyone to participate and provides choices rather than limitations and sends the message that these people are, in fact, important members of the community (Vandebelt, 2001). For instance, Lawton in his work in 1994 studied the effect of the built- environment on the elderly in society. He came to the conclusion that, a poorly-designed built-environment can negatively affect the lives of the aged.

An important outcome for inclusive design should therefore be of both ease architectural disability and realize a greater measure of social equity and justice. However, critics of inclusive design argue that, in many cases, it is impossible to provide a 'one size' fits all' solution and that some people will always be excluded.

2.2. Significance of person with disabilities legislation

The United States of America's Congress' response to the problem of discrimination against the disabled was the passing of the Americans with Disabilities Act (ADA) in 1990. It was followed by Australia and the United Kingdom in 1992 and 1995, respectively, with their versions of legislation called the Disability Discrimination Act (DDA) (Otmani et al., 2009). The major aim of all these pieces of legislation was the removal of barriers in the built environment to allow PWDs to participate in everyday life of their societies. Their main goals included providing people with disabilities access to buildings, equal employment opportunities, equal access to public transportation, the opportunity to attend school and the chance to be eligible for social security support (Little, 1995). The United Kingdom pushed further the frontiers of her

legislation by introducing part M of the 2004 Building regulations which established the concept of mainstream access provision to buildings. It was followed by the Disability Equality Duty (DED) which was born out of the Disability and Discrimination Act (2005) and seeks to compel all who design, manage and maintain the built environment to ensure that PWDs play a full part in benefiting from, and shaping an inclusive built environment (Duggan, 2006).

In Ghana, civil society and the Ghana Federation of the Disabled (GFD), the national umbrella organization for the PWDs, whose members include the Ghana Association of the Blind (GAB), Ghana National Association of the Deaf (GNAD), Ghana Society of the Physically Disabled (GSPD), Society of Albinos Ghana (SOAG), Parents Association of Children with Intellectual Disability (PACID) and Share Care Ghana (SCG), joined the struggle for the right of PWDs. In response, the government, in 1992, made provisions in its constitution that protects the rights of PWDs. In 1993, the Disabled People's Act was sent to parliament to be deliberated on, which eventually, culminated in its passage on June 23, 2006. The Bill aims to provide disabled people with accessibility to public places, equal employment opportunities, transportation at free or reduced prices, free, general and specialized medical care, etc. (Persons with Disability Bill, 2006).

2.3. International statutory building instruments

Apart from the legislations, various statutory building instruments, such as International standards, Building Regulations and Guidelines, Codes of Practice, etc., have also been developed by several countries and organizations to achieve designs and features that are useable by persons with disabilities. Their main goal is to provide guidance as to how the built environment can be designed to anticipate and overcome restrictions that prevent disabled people from making full use of premises and their surroundings. Examples of such instruments are: British Standards Institution (2001) – Design of Buildings and Their Approaches to Meet the Needs of Disabled People [BS8300 (2001)], Americans with Disabilities Act Accessibility Guide (2004) [ADAAG (2004)] and Accessibility for the Disabled, A Design Manual for a Barrier- Free Environment, Urban Management Department of the Lebanese Company for the Development and Reconstruction of Beirut Central District [SOLIDERE (2004)] - developed by the UK, USA and the UN, respectively, to provide guidance on good practice in the design of domestic and non-domestic buildings and their approaches so that they are convenient to use by disabled people.

3. Research method

The research adopted triangulation approach in the process of collecting and analyzing the data. The triangulation approach in this research consists of three methods of data collection and analysis: questionnaire survey, semi structured interview and observation. According to Denzin (1970) and Dixon et al. (1988) different research methodological approaches lead to greater validity and reliability than a single methodological approach The questionnaire was designed in line with the aim and objectives of the research to ascertain whether disabled facilities were fully incorporated in the Public University buildings in Ghana and also to find out the type of disabled facilities incorporated in the buildings.

The interviews were conducted in a semi structured format to allow respondents to express their own view points (Flick, 2002). The semi structured face-to-face interview was used to solicit additional information from the client's representatives for the university (the university development officer and Estate officer) on the main subject of the study. Under the observation, researchers observed the facilities within and around the selected buildings. These buildings are Main Library (ML), Science Lecture Theatre Complex/Auditorium (SLTC/A) and New Lecture Theatre Complex (NLTC). A purposive sampling approach was employed to select these three buildings because those buildings serve multi-purpose functions on the campus.

The targeted usage groups in this research were wheelchair users, people with limited walking ability, the visually impaired and the hearing impaired. The targeted respondents to answer the questionnaires included Building Construction Professionals who are client's representatives. In totality 2 key persons (University Development officer and Estate officer) were contacted to answer the questionnaires for the study. The questionnaires were delivered personally by the researchers with self addressed envelope to the respondents. This was to ensure that these 2 key targeted persons received the questionnaires and it was much easier to collect the questionnaires back for analysis.

4. Results and discussion

Data collected in the survey was grouped under the following four headings:

- Car parks and access routes to and around buildings (external accesses)
- Horizontal Circulation (building entrances, corridors, floor surface finishes etc).
- Vertical Circulation (ramps, staircases, lifts etc).
- Communication aids (signages, general lighting, audio communication, etc).

Compliance of Case Study Buildings was discussed in accordance with provisions in the three selected building instrument [BS8300 (2001), ADAAG (20040 and SOLIDERE (2004)]:

- **Car parks and access routes to and around buildings**

The grading of the selected buildings with respect to the level of compliance with the building instruments used showed that SLTC/A and ML buildings had outside car parks, but no designated parking spaces and settling down points for the disabled. The car parks of these two buildings were on level grounds without variation in surface profile and without the international symbol for disabled. It was noticed that NLTC building had no outside car park. The buildings with car parks had their nearest car park within the range of 100 m in proximity to their main entrance. Most of the access routes to and around the various facilities were accessible to PWDs; they were sufficiently wide, non – slipping and adequately lit. Their widths could allow wheelchair maneuvering and admit a blind person with a stick. All the case study buildings have steps and ramps on their main access route, except SLTC/A which had only steps without ramps on its main access route.

Car parking is an important activity at the beginning or end of journeys and it is required that, at least, one space or 5% of the total parking spaces, whichever is greater, should be earmarked for disabled motorists

[BS58300(2001); SOLIDERE (2004)]. This omission at all the car parks of the case study buildings means that a disabled motorist or passenger cannot use these car parks.

The lack of compliance of car parks and access routes to the provision of international building instruments for PWDs, is a worldwide phenomenon. Rogerson et al. (2005) compared the building regulations of Ireland with those of Australia, Canada, Denmark, UK, and Finland. The results indicated that the number of accessible parking bays at car parks for PWDs was only 5 – 6% in England and Wales, 4% in Finland, 10% in Denmark.

- **Horizontal circulation (building entrances, corridors, floor surface finishes, etc)**

All the buildings have more than one distinct entrance and their main entrances were manually operated without self – opening and self – closing doors. The main entrance of the ML and NLTC buildings have ramps provisions and therefore accessible to wheelchair users, except the SLTC/A building. The buildings have good and easily – operated ironmongeries which were placed at universally – accessible heights of less than 900 mm from the floor [SOLIDERE (2001)] and could be used by people with arthritis or a weak grip. The ease of operation of the main entrance door is an important factor when dealing with elderly or ambulant person. BS8300 (2001) recommends that the maximum closing force at the leading edge of a door fitted with self – closing devices or the manual opening force should not exceed 20 N and the maximum height of manual door-opening furniture should not exceed 1400 mm.

All the main entrance doors had clear widths of more than 900 mm which could allow the entry of all types of disabled people, especially cane and wheelchair users.

Corridor floor surfaces of the buildings were finished in terrazzo and screed. Those surfaces which were finished in terrazzo, screed and wooden carpet, had non – slip surfaces. Materials for floor finishing must, therefore, be easy to maintain and as slip – resistant as possible, especially if the surfaces are likely to become wet due to location or usage, or if spillage occurs. The polished porcelain floor could pose problems for infirm persons and people with visual impairments, whilst the carpeted floor of the other building could do same for wheelchair users.

- **Vertical circulation: ramps, staircases, lift etc**

Generally, the NLTC building performed better than the ML and SLTC/A buildings in provision of vertical circulation for the disabled persons because they had well – designed staircases and ramps. The NLTC and SLTC/A buildings had no lift and the lift of the ML building had broken down. For this reason, vertical circulations at these premises are only possible by means of staircases. For staircases to be comfortable to use, the rise and going need to reflect stride length while keeping within dimensional limits. Excessively high risers may result in excessive strain being placed on knee and/or hip joints of ambulant disabled people when ascending or descending flights of stairs. Tread and riser dimensions were uniform in the various staircases of all the facilities as required by BS 8300 (2001).

All the case study buildings had no internal complementary ramps provided next to steps or staircases. NLTC building had one external complementary ramps leading from the ground floor to the first floor. This

ramp has continuous handrails at both sides with landings at every change in direction and at the top and bottom as required by BS 8300 (2001).

- **Communication aids (signages, general lighting, etc)**

Communication aids refer to amenities, such as signage, audio communication, general lightings, etc. Generally, the case study buildings were most compliant with general lighting. None of the case study buildings had Braille text for the blind. BS 8300 (2001) requires that all key information, such as sign directories, orientation signs, maps and plans, should be visual and audible, and in tactile form and must be low enough to be touched. For clear visibility, text on signboards must be on a contrasting background and should be written in embossed letters because embossed letters are easier to read than indented or engraved letters.

Good artificial lighting is crucial in ensuring that visually – impaired people are able to use buildings conveniently and safely. The luminance on interior surfaces, the quality of the lighting, good colour rendering and the avoidance of glare are key factors to be considered. Older persons and people with visual problems are more sensitive to glare than younger persons, and BS 8300 (2001) avers that lighting should avoid creating glare, pool of bright light and strong shadows. All the case study premises had sufficient lighting systems but the switches to the lights at all premises was positioned at heights which are not easily reachable by both wheelchair users and ambulant persons.

When the respondents were questioned on whether the disabled facilities incorporated in the buildings on the University of Cape Coast campus are adequate or inadequate? The respondents (Development officer and Estate officer) were of the view that, the facilities were inadequate. The respondents were also asked whether they agreed that disability accessibility aid must be compulsorily incorporated in the design of Public University buildings. With this question, the respondents agreed strongly that disability accessibility aid must be compulsorily incorporated in the design of public University buildings.

Seven (7) out of the thirty-five visually impaired persons found at the University of Cape Coast visually impaired centre located at main library building were interviewed. According to them, the challenges they face is mobility. They said the visually impaired centre is located at the basement and they need to descend through the staircase which is very difficult for them. They also said there were no proper directional sign to direct them. The columns at the corridor leading to the visually impaired centre were not properly positioned which impeded their movement. In terms of the lighting in their lecture room, they said the lighting system is okay but the lighting outside the centre is different from what is inside their lecture hall, hence when they enter their centre there is some discomfort.

5. Conclusion

Despite the recognizable number of persons with disability (10%) of the Ghanaian population, and the passage of the persons with Disability Bill, by the parliament of Ghana, little has been done on the provision of access for people with disabilities in public buildings in Ghana.

Results of this research indicate that all the three buildings surveyed have serious deficiencies as far as accessibility to their built – environment is concerned. In terms of provision of facilities for disabled people, New Lecture Theatre Complex (NLTC), which obviously was the most modern among the three, had better facilities for PWDs than the Main Auditorium (ML) and Science Lecture Theatre Complex/Auditorium (SLTC/A) . Facilities for PWDs in and around the three buildings, such as car parks, ramps, directional signs, and hand rails are not adequately provided and should be improved.

The greatest levels of deficiency were observed in and around the two old buildings (Main Library and Science Lecture Theatre Complex/Auditorium). These buildings will need major retrofitting to make them accessible to PWDs.

6. Recommendations

Based on the conclusions drawn, the following recommendations are made to ensure the accessibility of the public University buildings by PWDs:

a) Retrofitting

- Designated car parks that are appropriately designed, constructed and signed should be provided for PWDs at all the three buildings.
- SOLIDERE (2004) recommends that, at least, one entrance per facility should be accessible to a wheelchair user. External and internal ramps should, be provided in the case study buildings to make them accessible to everybody. The dysfunctional lifts in the ML building should be repaired as a matter of urgency.
- Additional signs should be provided at all the facilities to minimize the possibility of both able and disabled losing their way around those premises.

b) Legislation and enforcement

With the passage of the PDA, Act 715, the Ghana Building Code and Ghana Building Regulations should be revised and passed into laws to make it mandatory for all public buildings to be accessed by disabled persons. This law should be enforced by the relevant state agencies like District, Municipal and Metropolitan Assemblies and the government should have the political will to back these agencies by penalizing all defaulters.

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