Application of Inclusive Deisgn Principles in the Design of Faculty of Environmental Science, University Of Jos, Plateau State-Nigeria

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ABSTRACT

It is a matter of great concern that people with disabilities on the African continent face barrier in the education system for a multiple of reasons. Public facilities/buildings seem to favour only the able persons as manifested in communal facilities like schools, hospitals, and banks among others Commission for Architecture and Built Environment Hence, there is need to include everybody in the design of faculty buildings and other public buildings/facilities. This is because most of the design provides facilities for only the able people, as if there is no tendency to have a disabled person in the institutions. This research investigated the level of application of universal/Inclusive design principles on the school of environmental Science of The University of Jos, Plateau State Nigeria. The research method used was case study research and observation using checklist was used in collecting the data from the cased building. Tables charts were used to analyze the data collected. The results show that the applications of universal design principles were not adequately applied in the cased building. The building seems to have some elements that are design to make the building more accessible. But there is still the need to improve on the application of universal/Inclusive design principles right from design stage to make the building accessible to all.

Keywords: Universal, Design, Disability, Accessibility

Date of Submission: 02-03-2023   Date of acceptance: 14-03-2023

I.   INTRODUCTION

1.1   Background to the Study

Public facilities seem to favour the able persons as manifested in communal facilities like school, hospitals and banks among others. Proposed Faculty of Environmental Sciences being the hub of nurturing architects to provoke their creative thought, design of building with diversity of users at hearth, provide new solution to access and usability and minimize barriers in building for the inclusion of diverse population (ACPF, 2011).

Universal design is an evolving and complex concept, whose definition can be extended to address not only age, gender and disability, but also race, income, education, culture etc. It is useful to supplement this open ended definition with an understanding of the basic premise, which lies behind inclusive design and its consequences(Morrow, 2002).

United Nations Educational, Scientific and Cultural Organization (UNESCO, 2013) In cooperation with the Ministry of Education and Science of, provides a framework for action on special needs education. The document proclaims that every child has a fundamental right to an education, that education systems must take into account diversity and that those with special needs must have access to regular schools with a universal orientation.

According to Svayam Foundation (2014) who needs accessible design?

In our universities/college students, faculty, visitors, employee's man require accessible design.

The target group is composed of 6 major categories:

a. Wheelchair users

b. People with limited walking abilities

c. The sightless and the partially sighted

d. People with difficulties in learning

e. Those persons who are temporarily disabled due to accidents or illness.

1.2   Background of the Study

The Phrase 'Universal Design refers to: The design of product and environment to be useful by all people to the greatest extent possible, with the need for adoption or specialized design (Center for Universal Design CUD, 2011). It has also been define as a movement that approaches the design of the environment, product and communications with the widest range of users in mind (Gossett, et al, 2009). This design for all approach is widely linked to discuss of social inclusion and human diversity. The general aim is to improve the physical and social environment and therefore reduce the need for special provision and assistive technologies (Stanfield, 2006).

Therefore, design process address how product, communication system, buildings, public utilities, amenities and spaces can be produce that are both functional for the greatest number of users and aesthetically accessible (Welsh, 2005). Advocate of universal design acknowledged that poorly design product and environment are discriminatory and disabled large sections of the population at various stages in life course. People with it impairments older people are particularly disadvantage. Nine out of ten people are likely to experience architectural Discrimination at some stage in their life time (Hanson, 2010).

Inclusive design is defined as the design of mainstream products and/or services thatare accessible to, and usable by as many people as reasonably possible without the need forspecialadaptationorspecializeddesigntothegreatestextentpossible(BSI,2005).Theconcept of inclusive design originated in the field of architecture as a response to concernsabouttheinefficiencyofindividualizedretrofittedsolutionsinbuildings,andtheinappropriatenessofplacingtheburdenof adaptationonindividuals (Bremeretal., 2002).

Also,theUKDesignCouncildescribesInclusiveDesignasneitheranewgenreofdesign,nor a separate specialism, but as a general approach to designing in which designers ensurethat their products and services address the needs of the widest possible audience, irrespectiveof age or ability (Design Council, 2008). Inclusive Design (also known [in Europe] as Designfor All and as Universal Design in the USA) is in essence the inverse of earlier approaches todesigningfordisabledandelderlypeopleasasub-setofthepopulation,andanintegralpartofamorerecentinternationaltrendtowardstheintegrationofolderanddisabledpeopleinthemainstream of society(Colemanet al, 2015).

A group of architects, product designers, engineers, and environmental design researchers at the CUD established seven principles for the universal design of products and environments (The Center for Universal Design, 2011).

These principles of Universal Design are listed below;

 (a) Equitable use: the design is useful and relevant to a wide group of users;

(b) Flexibility in use: the design accommodates a wide range of individual preferences and abilities;

(c) Simple and intuitive use: the design is easy to understand regardless of the knowledge, experience, language skills or concentration level of the user;

(d) Perceptive information: the design communicates information effectively to the user regardless of the ambient condition or the sensory abilities of the user;

(e) Tolerance for error: the design minimizes the hazards and adverse consequences of unintended actions by the user;

(f) Low physical effort: the design can be used easily, efficiently and comfortably with a minimum of fatigue;

(g) Size and space: the size and space for approach, reach, manipulation and use should be appropriate regardless of the body size, posture or mobility of the user.

(Centre for Universal Design, 2011) Universal design artifacts, products and infrastructures and most therefore be a barrier free and accessible to all regardless of age, impairment, gender, ethnicity and sexuality. By acknowledging the diversity of the human condition universal design promotes the creation of physical and cultural environments that enable everyone to carry out their daily activities in comfort and safety without undue hindrance and inconvenience. A commonly cited example is a universally designed building with ramps, lifts and automatic door that will not only be easily accessible for wheelchair users but also for people with baby carriages, shopping trolley and luggage (Lepofsky and Graham, 2009).

1.3   Statement of the problem
It is a matter of great concern that people with disabilities on the African continent face barrier in the education system for a multiple of reasons. Public facilities/buildings seem to favour only the able persons as manifested in communal facilities like schools, hospitals, and banks among others Commission for Architecture and Built Environment (CABE, 2012).

In institutions, the public facilities such as faculty buildings fail to be friendly to every user of the building especially in terms of accessibility. This is because the design provides facilities for only the able people, as if there is no tendency to have a disabled person in the institutions (CABE, 2012).

Faculty building, just like other public buildings is meant for everybody. As everyone has equal right to use it for his own need. In an institution, students have equal right to access the school facilities, such as lecture halls, library, laboratories and faculty buildings (WHO, 2011).

Therefore, there is need to implement or apply the principles of universal or inclusive design right from design stage to enable the building to be accessible to all users.

1.4   Aim and Objectives of the Study
The aim of the research is to investigate the level of application of inclusive design principles on faculty of environmental science, university of Jos-Nigeria.

1.5   Significance of the Study
Nigeria is a diverse nation which has about 19 million people living with one form of disability or the other (Seun, 2014). Considering them in our design can give barrier free education in the society. Giving them access to education can lead to the improvement the economy.
Our built environment, however, may not be so easily or inexpensively modified tosuitourchangingneedsinthefuture.Moreover,thefutureofarchitectureshallgreatly benefit from this emerging trend that makes architectural products usable and accessible bywide range of people (Clarkson, 2015).

Universal/Inclusive design ultimately benefits everyone. People who do not have an immediate need may not value universal design, even though at some point in their life they may find universal or Inclusive design beneficial. This includes everyday products that become easier to use, such as lecture halls, laboratories, Studios, offices and other facilities within the Faculty.

1.6   Scope of the Study
This study is limited to the application of Universal Design Principles (UDP), of Faculty of Environmental Sciences, University of Jos. The building contains the following key functional spaces: The Dean's Office, Office of the HOD's, Faculty Conference Room, Faculty Library, Lecture Rooms, Studios, Laboratories, Staff Offices, and Lecture Theatres with emphasis on vertical and horizontal movement.

II.   Literature Review
2.1   Universal Design
The Phrase 'Universal Design refers to: The design of product and environment to be useful by all people to the greatest extent possible, with the need for adoption or specialized design (Center for Universal Design CUD, 2011). It has also been define as a movement that approaches the design of the environment, product and communications with the widest range of users in mind (Gossett, et al, 2009). This design for all approach is widely linked to discuss of social inclusion and human diversity. The general aim is to improve the physical and social environment and therefore reduce the need for special provision and assistive technologies (Stanfield, 2006).

2.2   The principles of Universal Design
The principles of universal design according to Center for Universal Design (CUD, 2014) are as follows;
Definition: The design is useful and marketable to people to people with diverse abilities.
This means that we should create designs that appeal to everyone and offer everyone a way to participate. Principle 1 addresses making designs useful and marketable to diverse groups   of users concurrently: design for all people.
Guidelines:
i.   Provide the same means of use for all users: identical whenever possible, equivalent when not;
ii.   Avoid segregating or stigmatizing any users; identical whenever possible, equivalent when not;
iii.   Avoid segregating or stigmatizing any users;
iv.   Make provision for privacy, security, and safety equally available to all users;
v.   Make the design appealing to all users.

Definition: The design accommodates a wide range of individual preferences and abilities.

This means that we should provide for multiple ways of doing things. People ought to be able to use the design in any way that suits them personally. Adaptability is one way to make designs universally usable. Principle 2 addresses individual needs: design for each person individually.

Guidelines:

i.   Provide adaptability to the user's space

ii.   Facilitate the user's accuracy and precision;

iii.   Accommodate right or left-handed access and use;

iv.   Provide choice in methods of us.

Definition: Use of the design is easy to understand, regardless of the user's experiences, knowledge, language skills, or current concentration level.

This means that we should make things work the way you would expect them to work. Principle 3 addresses the cognitive issues of design use. A new user should be able to understand how to use the design the first time.

Guidelines:

I   Arrange information consistent with its importance;

ii.   Provide effective prompting and feedback during and after task completion.

iii. Accommodate a wide range of literacy and language skills;

Iv.   Be consistent with user expectation and intuition;

v.   Eliminate unnecessary complexity

Definition: The design communicates necessary information effectively to the user, regardless of ambient conditions or user's sensory abilities.

This means that we should provide for multiple modes of input and output. Principle 4 addresses the sensory issues of designs. (For design applications, we are primarily concerned with limitations of sight, hearing, and tactile sensitivity and less with limitations of smell and taste).

Guidelines:

i.   Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

ii.   Maximize ''legibility '' of essential information;

iii.   Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information;

iv.   Differentiate elements in ways that can be described (i.e make it easy to give instruction or direction);

v.   Provide adequate contrast between essential information and its surroundings.

Definition: The design minimizes hazards and the adverse consequences of accidental or unintended actions.

This means that we should make it difficult to make a mistake, but if someone does, he should not hurt himself or the product. Everyone makes mistakes; but designs should be forgiving. Whenever possible, mistakes should be reversible or at least cause no harm.

Guidelines:

i.   Provide warning of hazards or error;

ii.   Discourage unconscious action in task that require vigilante;

iii.   Arrange element to minimize hazards and errors: most used elements, most accessible; hazardous element eliminated , isolated, or shielded;

iv.   provide fail safe features;

Definition: The design can be used efficiently and comfortably and with a minimum of fatigue.

  This means that we should minimize physical strain and overexertion. While some universal design experts in landscape architecture disagree with this Principle because it defeats the purpose of exercise, most others agree that designs should not physically overtax users

Guide lines:

i.   Minimize sustained physical effort

ii.   Use reasonable operating forces;

iii.   Minimize repetitive actions;

iv.   Allow user to maintain a neutral body position;

Definition: Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, pasture, or mobility.

This means that we should accommodate variety in people's body sizes and ranges of motion. This Principle addresses the physical space incorporated into a design to accommodate the user's body and any devices or companions needed during use.

Guidelines:

i.   Provide adequate space for the use of assistive devices or personal assistance.

ii.   Make reach to all components comfortable for any seated or standing user;

iii.   Provide a clear line of sight to important elements for any seated or standing

iv.   Accommodate variation in hand and grip size;

Universal design based on the above principles is very important in the sense that it is useful and marketable to people with disabilities, it also accommodates a wide range of individual preferences as it is easy to understand regardless of user's experience or skills. Universal design also minimizes hazards and fatigue. It also provides adequate space for approach, reach, manipulates and use regardless of users body size, posture or mobility.

III.   Research Methodology

For the purpose of this research, qualitative research approach was applied in carrying out this research. Qualitative research approach involves studying a case in relation to the complex dynamics with which it intersect. It was therefore conducted only for specific with related peculiarities to the subject attitude of the study, through objective method of observation,(Sing,2006)

The research paradigm to be use would be interpretivism which use in social science research which is subjective.

3.1 Nature of Research

The Research is exploratory in nature and as such explores a new idea which little or no work has been done on it earlier. The goal principally was to design a faculty of environmental science that would formulate precise question that future research can answer. Since any researcher require to know how enough to design and execute a more systematic and extensive study.

3.2 Research design

Uji (2009) define research design as the act of putting in place the research strategies that would help ensure that the study provide answer to the fundamental question raised on it. Research design define as the specification or procedure for collecting and multiplying the data necessary to help solve the problem at hand such that the different between the cost of obtaining various level of accuracy and expected value of the information associated with each level of accuracy is maximized

3.3 Research approach

Research approach are plans and the procedure for research that span the decision from broad assumption to detailed method of data collective and analysis, it involve the intersection of philosophical assumption, design and specific methods. Therefore this research conducted in two stages.

The first stage include a detailed literature review and analysis, which continue through the research and then integrated into data analysis, the second stage consist of in- depth review of case studies, site visit, and document review, this stage help the researcher to validate the research question and identify the variables of interest related to variables of those question. The uses of multiple of data source help to increase internal validity and reliability.

This research would be conducted on the interpretivism philosophy and inductive approach Based on the tripartite cluster classification of research, (Groat and Wang, 2001),

3.4 Research strategy and time horizon

The research adopted mono method of data collection being the best and most suitable for Architectural research work (Groat and Wang (2001, Uji2009, Yin 2009 and Imenda, 2014) in cross sectional time would be used to collect the data at a single point.

To insure a reasonable outcome both primary and secondary source were use in collecting data for the research. However the research objective was addressed by the primary data therefore.

I Research objective one of this study was addressed by observation/ checklist

ii Research objective two of this study was addressed by observation

iii Research objective three of this study was addressed by finding from field and its subsequent application in the design

3.5   Research method

A case study research approach was adopted for this research work. This is because it is used to study a particular case in point with a view to examining in great depth and extent, the characteristics of that individual unit (Aina, 2002). Thus, a descriptive case study is to be adopted so as to compare the level of application of universal design principles on existing faculty buildings.

3.6 Case study selection criteria.

Studies by khairul (2008) show that case study selection comparable to sampling in qualitative research and that those cases were usually purposely selected. Hinging on these, he added that means for the cases to be identified, they have to possess some intrinsic virtues which are in relation with the phenomenon under

consideration. The selection for selecting the case studies was based on architectural planning or functional facility related to faculty building.

The multicase study strategy was used were both the internal and international case study were analyses with appropriate checklist for evaluating and the use of variables of the study

3.7 Instrument for data collection
In order to achieve the research goal, There are number of instrument used for collecting qualitative data. The instrument to be used for this research includes; Physical Observation, and sketches. Other instruments to be used for data gathering in this research include: Photographs, Checklist, and Documentary Source.

3.8   Method of Data Collection
The study will employ some instrument for data collection as discussed above. Each of the instruments will be used in collecting data as follows

i.   Physical Observation
Visit of the site or building and to carefully observe its features, guided tour around the building and its facilities. Information to be gathered will be used to assess the outlined variables.

ii.   Photographs
Photographs are to be taken of relevant case studies to ascertain the features of architecture they possessed in relation to the variable check.

iii.   Checklist
Observation checklist was used in ticking the appropriate option seen on the existing buildings studied.

Iv   Sketches
Sketches were made on the part of the case studies. These case studies showed the arrangement of facilities that are related to variable check.

3.9   Method of Data Analysis
The general frame work of analysis for cross case (Yin, 2009) was used in analyzing data collected through case study while the data obtained through document scrutiny and observation was analysed using classical content analysis as in Creswell (2012).

3.10   The Study Variables
A variable is defined as anything that has a quantity or quality that varies. The dependent variable is the variable a researcher is interested in. The changes to the dependent variable are what the researcher is trying to measure with all their fancy techniques. An independent variable is a variable believed to affect the dependent variable. This is the variable that you, the researcher, will manipulate to see if it makes the dependent variable change (Issa, 2014).

From the above definitions and based on this research work, the study variable is define as the elements or components of the case building responsible for altering the principle of universal design of the building.

For the purpose of this study, the variables that were checked are based on the data collected and also based on the questions that were posed to be answered. The variables are the four (4) principles of universal design as follows;
i.   Simple and Intuitive use
ii.   Equitable use
iii.   Flexibility in use
iv.   Size and space for approach and use.

IV.   Case Study: Faculty of Environmental Science, University of Jos

Faculty of environmental science Building is located in permanent site of the university, in Jos north Local Government Area, Plateau State, owned by federal Government. The project is constructed by Mould Nigeria Limited, The construction date is 2013. The faculty Building is currently Functional.

4.1   Brief History
The University of Jos was established in November in 1971 by the federal government as a satellite campus of the University of Ibadan, a university becomes a full operation in October 1975 to 1976 academic year.

The Faculty is located in Jos at the old campus of the university along Bauchi road. The faculty of environmental science come into being during 1979/1980 academic session, with three foundation departments; architecture, building and geography and planning, at inception of other faculty were introduce such as estate management, quantity surveying, urban and regional planning, and fine art.

The new faculty of Environmental science building was built in 2003, in permanent site which is located along Zaria road in Jos. The new faculty building comprises of seven Department which comprise Architecture, fine and applied art, estate management, and urban and regional planning. While the other three

departments are situated close to the main faculty which comprise of building, quantity survey, geography and planning.

PlateI: Layout of University Jos, Faculty of environmental science
Source: www.googlemap.com, (2023)

The faculty building comprise of three storey, of which each department both have classes on ground and first floor while second floor comprises of HODs office, data room, conference room and classes. The department on the faculty comprises of Architecture, fine and applied art, estate management, and urban and regional planning. The faculty building comprises of the following.
1.   HODs office.
2.   Classes
3.   Seminar room
4.   Studios
5.   Exams office
6.   Lecturers offices
7.   Data room
8.   Conference room
9.   Student archive

4.2   Simple and Intuitive
4.2.1   *Building form*
The building form employed is rectangular in shape combined with other long rectangular section together, the building is on grid of 3.6m and various sections of the building were connected with walkways along the entire section.

4.2.2   *Ease of identification*
The building have three (3) segment binded together as a single unit by which each two (2) segment have a central focal point with a recess on it which shows the clear identification of each entrance. The faculty building has a clear entrance point with attached a foot path that link to the faculty.

Plate II: Approach view with central entrance to the faculty of environmental Science building university of Jos
Source: Researcher Field Work (2023).

4.2.3   Arrangement of accessible with importance

The faculty block is divided into three floors of which both ground and first floor have classes of undergraduate and post graduate studies while the third floor have HODs offices, conference rooms, seminar rooms, data room, classes, and studios. The faculty building has two (2) central ramps that link all the classes and administrative block with different exit on corridor and also there is stair case positioned at both ends of the faculty Building.

Figure III: Ramp provided for vertical access to the building
Researcher Field Work (2018)

4.3　　Equitable Use

4.3.1　　Building accessible to every one

The faculty of environmental science have a vertical and horizontal means of circulation, for the vertical means there is central ramp that linkall the three (3) floors of the faculty with stair case at all the extreme end of the building the building it make easier for both able and disabled users.

4.3.2　　Provision of safety along corridors

The faculty building corridors serve as link to faculty facilities such as classes, seminar room, data room, offices and other faculty facilities. But the outside corridors does not have safety handrails.

4.3.3　　Learning facilities are they accessible to every one

Faculties building on the ground floor, first floor and second floor have a free step (no change of levels) on all the entrances to faculty facilities such as classes, offices, seminar rooms, conference room, and student archives. Thus, it is easier for both able and disabled users.

PlateIV: Ramp passes through different floors
Researcher Field Work(2023)

4.4　　Flexible in use

4.4.1 Building has different access

The faculty building has means of vertical and horizontal access so as to make easier for users, for the vertical means, there is provision of central ramp and between the two ends of the block stair case is provided that link the subsequent floors. For horizontal movement there is existence of corridor in between. The facilities enhance easy movement for users in the faculty.

4.4.2 Space to adopt changes

As a result of the faculty building has ramp, staircase and corridors; the users have other alternative space to adopt changes.

Figure V: Staircase for vertical circulation
Researcher Field Work(2023)

4.5 Size and space for approach use
4.5.1 Height and size of hand rail
The building has a different variety of handrail along floor and corridors with various thickness and height as required/needed.
4.5.2 Adequate space for movement
The entire link ramp and corridors of ground and others subsequent floors are adequate to carry a lot of users for easy movement.

Plate VI: Corridor for horizontal movement
Researcher Field Work(2023)

Table 1. Below shows the Checklist for the Assessment of Universal design Principles on Faculty of Environmental Science, University of Jos, where level of application of each variable in the design was rated.

Table 1 Checklist for the Assessment of Universal design Principles on Faculty of   Environmental Science, University of Jos.

S/N0	Variables	Checklist		Level of Application					Remarks
				1	2	3	4	5	
1	Simple and Intuitive	Building Form.	(Complex or Simple)				√		its simple rectangular plan.
		Ease of Identification.	Entrance to the Building.	(Defined or Hidden)			√		Clear define. Entrance
		Arrangement of Accessible with Importance.	Position of Staircase or Ramp.	(Defined or Hidden)			√		Both stair and ramp are clear define
2	Equitable Use	Building Accessible to Everyone.	Presence of Staircase or Ramp.	(Presence or Not)		√			Stair and ramp present.
		Provision of Safety Along the Corridors.	Presence of Handrails Along Floors.	(Present or Not)	√				Hand rails are absent.
		Learning Facilities are they Accessible to everyone?	Access to Lecture Halls, Classes a	(Easy or with Difficult)		√			Easy but ramp slope its little steep.
3	Flexible in Use	Building has Different Access?	Stair, escalator Ramp, lift Or corridor.	(Present or Not)		√			stairway, ramp and corridor present
		Spaces for Access Adopt Changes	Ramp or staircase.	(Easy or Difficult to use)		√			Both Fair easy to use
4	Size and Space for Approach	Height and Sizes of Handrail.	Height, Diameter of Handrail.		√				Hand rails are fair ok.
		Adequate Space for Movement.	Corridor, Ramp or Staircase.	(Wide or Narrow)	√				Wide space for movement.

Source: Researcher (2023)

Rating keys: 1=Poor, **2**=Not Adequate **3**=Fairly Adequate 4=Adequate, **5**=Very Adequate

4.6   Case Study Appraisal
I.   The design considers different entrance along all the extreme end for easier exit.
II.   The faculty design has a central ramp that link all the functional department immediately after the entrance.
III.   The faculty design has various staircases along different end in order to facilitate easier movement within the faculty.
IV.   The design considered a central entrance porch at the midpoint of the faculty for easier identification
V.   The faculty design considers able person of having ramp, staircase and corridors.
VI.   The faculty has large parking space.
VII.   Both stairs, ramp and corridors has safety protection
VIII.   The design consider wide   of stair case and ramp for easy vertical circulation.

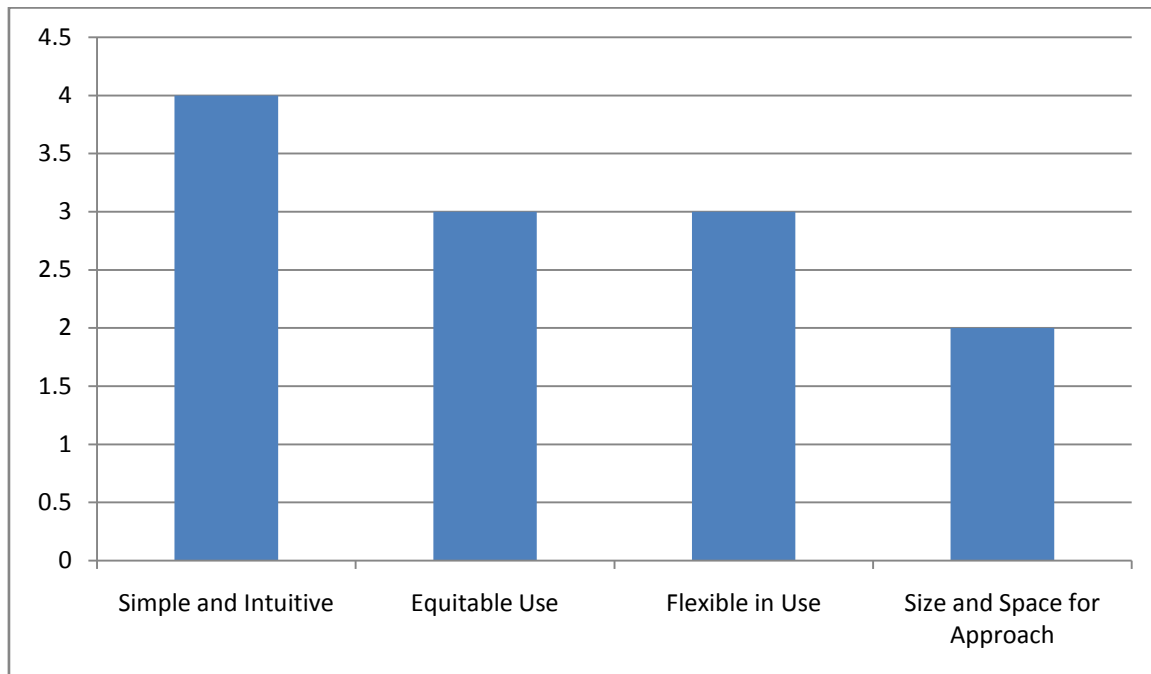| IX.	S/N	Variables	Average Score	Remark
	1	Simple and Intuitive	4	Adequate
	2	Equitable Use	3	Fairly Adequate
	3	Flexible in Use	3	Fairly Adequate
	4	Size and Space for Approach	2	Not Adequate

Source: Researcher, 2023

Figure 1:Level of Application of the Variables of ATBU Faculty of Environmental Tech.
Source: Researcher (2023)

V.   SUMMARY OF FINDINGS

The design considers different entrance along all extreme (ends) for easier exit.The faculty design has a central ramp that link all the functional department immediately after the entrance.

The faculty design has various staircases along different ends in order to facilitate easier movement within the faculty.

The design considered a central entrance porch at the midpoint of the faculty for easier identification

The faculty design considers able person of having ramp, staircase and corridors.

The faculty has large parking space.

Both stairs, ramp and corridors has safety protection

The design consider wide of stair case and ramp for easy vertical circulation.

5.1   Summary

Universal design originally emerged from the disability movement. However, many older people, families with children and people whose first language is not English will also benefit from an accessible and universal environment.

In summary Inclusive or Universal design it is an approach that considers the widest possible audience, addressing the needs of people who have been traditionally excluded or marginalized by mainstream design practices. Good design should meet the needs of the diverse population and should remove the physical barriers that can segregate and exclude.

5.2Conclusion

Inclusive Design Principles requires the need for paradigm shift to social Architecture in education and in practice, this is because we must include everyone and fight for all to have equal access to the built environment. After all, that is what community is all about; Failure to respond to the demographic changes occurring will betray our future generations.

We need to be forward thinking with guidelines which architects will want to obey for the good of their people. Egalitarianism is vital to successful accessibility for all. We need designs that are not inherently discriminatory and will facilitate security, access, equality and dignity, regardless of physical or mental ability, should be there for all to enjoy and appreciate.

People irrespective of their ender or disability deserve equal access and a Nation's greatness is measured by how it treats its weakest members.

5.3   Recommendations

i. Professional bodies: At professional level, architects and allied professionals should inform its members to provide the society with up-to-date solutions to be equipped to move the construction industry as a whole into a new era of design quality based on universal design principles.

ii. Public Awareness: Information is power; heightened social awareness in the society is required to educate the populace at all facets of learning for the users to demand from the service providers.

iii. Regulatory Authorities: Nigeria being a signatory to Convention on the Rights of Persons with Disabilities (CRPD) should ensure the passing into law a bill titled 'an Act to ensure full integration of Persons with Disabilities and to establish a National Commission for Persons with Disabilities' and empower the relevant regulatory authorities to enforce universal design standards to the environment, product and services.

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