APPLICATION OF UNIVERSAL DESIGN PRINCIPLES IN THE DESIGN OF RUSINGA SCHOOL NAIROBI

Project Paper submitted to School of Art and Design, University of Nairobi in partial fulfilment of the requirements for the Undergraduate degree of Bachelor of Art (Interior design)

By:
Lydia Moraa Mokaya
B05/31119/2009

Supervisor: Dr.W.H.Onyango

8th Jan 2013

Keywords: Interior design, Furniture design, Landscape Exhibition & display
CHAPTER ONE

1.0 Introduction

1.1 Background of the study

Design is everywhere. The single word ‘design’ encompasses an awful lot, and that’s why the understanding search for a single definition leads to lengthy debate. There are broad definitions and specific ones – both have drawbacks. Either they are too general to be meaningful or they exclude too much. (Design council) One definition aired by designer Sir George Cox in the Cox review, is that ‘it is what links creativity and innovation. It shapes ideas to become practical and attractive propositions for users or customer. Design may be described as creativity deployed to a specific end’. (Hunter)

Design is fundamental. People often need reminding that everything around us is designed and that design decision impact on nearly every part of our lives, be it the environment we work in or the way we go about getting the lid off the jam jar. When those things work, it is taken for granted, but as Bill Moggridge, founder international consultancy IDEO, says: ‘A lot of trial and error goes into making things look effortless.’ (Design council). Perhaps the most obvious attribute of design is that it makes ideas tangible; it takes abstract thoughts and inspirations and makes something concrete. In fact, it’s often said that designers don’t just think and then translate those thoughts into tangible form; they actually think through making things (Hunter). There is a path all designs take on their journey from the world of imagination to the world of objects. By allowing the path to meander and twist without much restriction making sure that the process makes certain well-defined stops along the way, designers can examine and explain the idea at each step of its evolution without stunting its growth. This ability to make new ideas real from an early stage in developing products or environments means that they have a greater chance of becoming successful more quickly. (Aspenlund, 2010)

A design does not have to be new, different or impressive to be successful in the marketplace, as long as it’s fulfilling a need, but design methods do lead to innovative products and services. Designers learn that ideas that may seem strange are worth exploring and that the ‘common-sense’ solution is not always the right one. Designers
often hit on counter-intuitive concepts through methods such as drawing, prototyping, brainstorming, and user testing. Good design is not simply about the surface. Aesthetics are important, but only part of a bigger picture. Good design begins with the needs of the user. No design, no matter how beautiful and ingenious, is any good if it does not fulfill a user needs. (Design council)

In response to changing lifestyle and a growing appreciation for the diversity in people, we are moving towards environment that support and adapt to a variety of people. In the offices homes we design, build and furnish, we must create spaces that incorporate flexibility and adaptability allowing for use by most people. This growing trend is universal design which, once incorporated will be simply good design. (Dobkin & Peterson, 1999) Often, designers focus on the average user. In contrast, Universal design is a goal that puts a high value on both diversity and inclusiveness. It is also a process. Universal design intends to design all products and build environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. During design, designers must consider several aspects, one should consider ease movement for the disabled with wheelchairs or crutches, accessibility to important areas. Universal design aims in creating designs that are equitable in use, flexible, simple and intuitive, have perceptible information, tolerant for error, require low physical effort and have enough size and space for approach and use.

Universal design principles are currently being applied in modern day designs mostly in designs of public spaces such hospitals, school both the learning style and physical space, libraries, hotel, restaurant and many more. While courses, technology, and student services are typically designed for the narrow range of characteristics of the average student, the practice of universal design in education considers people with a wide range of characteristics in the design of all educational products and environments. Universal design in education goes beyond accessible design for people with disabilities to make all aspects of the educational experience more inclusive for students, parents, staff, instructors, administrators, and visitors with a great variety of characteristics. These characteristics include those related to gender, race and ethnicity, age, stature, disability, and learning style.
Originally applied in the field of architecture and later to commercial products and information technology, Universal Design education applications are relatively new. UDE provides a philosophical framework for the design of a broad range of educational products and environments. These include:

- computer and science labs,
- curriculum,
- educational software,
- instruction,
- libraries,
- professional organizations,
- registration options,
- student housing and residential life,
- websites, and
- Other student services.

Universal design can be applied to physical spaces to ensure that they are welcoming, comfortable, accessible, attractive, and functional. Specific considerations should be made for climate, entrances and routes of travel, furniture and fixtures, information resources and technology, and safety. When Universal design is applied, individuals with and without disabilities can use the same entrances and of travel routes. The climate is welcoming and accessible for everyone. For example, in a universally designed classroom furniture is adjustable in height and can be easily arranged for different learning activities and groupings. A universally designed facility includes clear directional signs in large, high-contrast print. Another example of UD of physical spaces is doors with sensors that automatically open for individuals carrying packages, those using wheelchairs, the elderly who experience weakness, or parents pushing baby strollers. (Burnstahler, 2012)

This project was based on investigating ways of applying universal design principles in the interiors, furniture, exhibition & display and Landscaping of Rusinga School more specifically in the reception and staffroom spaces. Sustainability in interior design and African contemporary design as the theme are also considered in the study.
1.2 Profile of Rusinga School

Rusinga School is located along Gitanga Road next to kawangware just opposite Braeburn School. It’s a Christian international co-educational day school following British curriculum (BNC). It incorporates Kindergarten, Primary School and a Secondary school including A –level. The general material at the construction and design include stone, tiles, wood and paving bricks. The school’s reception exhibits displayed items such student paintings, pictures, sculptures and trophies while in the staffroom there is lack of display except notice board. The staffroom area is divided into three spaces: working area, lounge area and washrooms. The reception and staffroom has both fixed and moveable furniture which include storage, seating, tables and reception desk. The furniture is mostly made of wood, glass, fibber and cotton. The co-operate colours of Rusinga School include navy blue and sky blue. The outside small landscape, basically consist of shrubs and a tree at the centre, with no seating furniture.

1.3 Problem of statement

Proper design intends to provide physical comfort, function comfort and psychological comfort. Rusinga School does not currently exhibit any aspect of universal design principles in its interiors, furniture design, exhibition & display and landscaping. The reception area lacks enough circulation and manoeuvring space more so for persons with wheelchairs. The seats are not flexibility in use. The flooring material (door mat) inhibits easy movement and the door size and design inhibits easy accessibility. The reception desk design doesn’t allow easy accessibility to the receptionist by people with wheelchairs. The reception exhibits items such as student’s paintings, student pictures, sports trophies and sculpture; however the display design is poor. The staffroom is dived into three sections: working area, lounge area and washrooms for both gents and ladies. The wood parquet floor in the staffroom area is slippery, stained in some parts and expensive to maintain. The furniture arranged is bad, some sofas have been put too close to the entrance doors thus causing obstruction. There is lack of enough storage facilities, and the few available are not easily accessible. The teacher’s washrooms have little space for circulation neither grab bars for support thus a person with a wheelchair or crutches will not be able use them. The landscape just outside the staffroom lacks variety of plants thus making uninteresting and unwelcoming.
1.4 Objectives

1.4.1 Main objective

To investigate ways in which universal design can be applied in the interiors design, landscaping design, furniture design and exhibition & display of Rusinga School area.

1.4.2 Specific objectives

- To investigate different ways in which universal design can be applied in design of Rusinga school reception and staffroom.
- To improve the design quality of the reception and staff room by creating more ambience and making it more accessible to all in the context of using universal design principles.
- To investigate if the application of universal design in the interiors of the school reception area and staffroom, in the exhibition and display, furniture design and landscaping will have a positive impact on the users of the current environment.
- To propose ways of applying universal design principles in the interiors design, landscaping design, furniture design and exhibition & display of Rusinga School.

1.5 Research Question

1.5.1 Main question

How can universal design be applied in the interior design, landscaping design, furniture design and exhibition & display of Rusinga School?

1.5.2 Specific questions

- How can universal design be applied in Rusinga school reception and staffroom
- What are the ways of improving the design quality of the reception and staffroom through the use of universal design?
• Does the application of universal design in the interior design, landscape design, exhibition and display, furniture design and landscaping have a positive impact on the users of the current environment?

• How can universal design principles be applied in the interiors design, landscaping design, furniture design and exhibition & display of Rusinga School?

1.6 Significance of the Study

People are divers - some are left handed and some right handed-and vary in their age, size and functional capacities. Illness or disability (temporary or permanent) can also affect characteristics such as a person’s mobility, dexterity, reach stamina, sight, hearing, balance, strength, speech, touch knowledge understanding, memory, or sense or direction. People of diverse abilities should be able to use buildings and places comfortably and safely, as far as possible without special assistance. People should be able to fit their way easily. The study will seek to propose ways of applying universal design principles in the interiors, Furniture, landscaping and exhibition & and display of Rusinga schools.

1.7 Limitation of the Study

Having a lean budget and limited time will restrict the research to few case studies in the Interior Design sector on application of universal design in school. Information on research methods for design related studies such as the one undertaken here is also not readily available. It is therefore necessary to rely on methods generally recommended for this kind of research.
1.8 Scope of the study

1.8.1 Concept and content

The study referred mainly to concepts of interior design that aims at enhancing the accessibility and flexibility of school environments through use of Universal Design principles. The problem was approached from the interior design standpoint with universal design being used only as a tool to solve design problems. The study mainly relied on secondary sources but more information was acquired from primary sources. The Materials, data and ideas were sought out, to have a project that embraced the idea of investigate ways in which universal design can be applied in the interiors design, landscaping design, furniture design and exhibition & display of schools

1.8.2 Geographical

The research proposal will be based in Nairobi Kenya with the study area being Rusinga School Nairobi.

1.9 Conceptual framework

Figure 1: conceptual framework

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Dependent variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal interior design</td>
<td>Sustainable African contemporary school design</td>
</tr>
<tr>
<td>Universal furniture design</td>
<td></td>
</tr>
<tr>
<td>Universal landscaping architecture</td>
<td></td>
</tr>
<tr>
<td>Universal Exhibition &amp; Display design</td>
<td></td>
</tr>
</tbody>
</table>

Source: Author
1.10 Definition of terms

**Interior design:** this is a professionally conducted, practiced-based process of the planning and realization of interior of interior spaces and all elements within. Interior design is concerned with function and operation of the space, its safety, and efficiency, its aesthetics and its sustainability.

**Universal design:** Ronald L Mace (founder & program director of The Center for Universal Design) uses the term ‘Universal design’ to describe the concept of designing all products and build environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design’. (Burnstahler, 2012)

**Reception:** this is a room in an office or hotel where visitors or guests are received and appointments or reservations are dealt with. (Piotrowski & Rogers, Designing commercial interiors, 1999)

**Staffroom:** is a room in a primary school, middle school, high school, college and/or university where the teachers and/or school staff talk to each other, discuss work, eat, drink and socialize. In primary school there is usually just one staff room, while in middle school, high school, college and/or university, there can be multiple staff rooms. Most staff rooms usually have kitchens, desks, tables, and chairs. (Wikipedia)

**Contemporary interior design:**

It is the opposite of traditional. It involves clean lines in the design of furniture, striking colors, and abstract ideas for rugs, wall colors.

**Bubble diagram:** A bubble diagram is a diagram which represents information visually in the form of a series of bubbles. This type of diagram can be used to present a wide variety of information for the purpose of activities like presentations, planning out designs, and developing strategy. Many programs with features which allow diagramming have the capacity to produce bubble diagrams and it is also possible to buy specialized software. Some people prefer to produce such diagrams by hand. (Wisegeek)
**Door ironmongery:** A collective term for comforts including hinges, handles, locks and self–closing devises, which are used to facilitate the correct functioning of a door. May also be termed ‘architectural ironmongery’ or ‘door furniture’. (National Disability Authority, )

**Vision panel:** A fixed, glazed panel set into a door that enables people to see through from one side of the door to the other. May also be termed ‘viewing panel’ (National Disability Authority, )

**Interior design process:** It follows a systematic and coordinated methodology including research, analysis and integration of knowledge into the creative process whereby the needs and resources of the client are satisfied to produce an interior space that fulfills the projects goal. (Edwards, 2011)
CHAPTER 2

2.0 Literature Review

2.1 Introduction
Designing any product or environment involves the consideration of many factors, including aesthetics, engineering options, environmental issues, safety concerns, industry standards, and cost (Burgstahler, 2004). One factor that has increasingly become a major concern to designers is creating environments and product that accommodated all people; as a result the philosophy of universal design is being applied to achieve this. In this chapter the researcher will concentrate on literature review concerned with; universal design principles and its application, interior spatial movement- circulation, reception space, staffroom space, sustainable interior design, African contemporary interior design, african contemporary furniture design, african contemporary exhibition and display and African contemporary landscaping design.

2.2 Review of previous studies

2.2.1 Universal design

“Design shapes the way we live, so it ought to serve everyone”

Eva Maddox (Doddins, 2009)

(Joines S., 2009) In her article “Enhancing Quality Life Though Universal Design” she describes Universal design as a paradigm where people of all abilities are included in the intended population of users of a product or environment.

In modern day design, universal design is a principle of design considered in interior design. Public spaces are areas that receive people of all ages and abilities hence one should take this aspect into consideration when designing. To be able to design a space, Universal Design follows seven principles guidelines. The first principle of Universal Design is Equitable Use. According to Dobkin & Peterson,(1999) all design should be useful and marketable to people with diverse abilities. Provide the same means of use for all users: identical whenever possible; equivalent when not. The designer should avoid segregating or stigmatizing any users. He or she should ensure that provisions for privacy, security, and safety should be equally available to all users,
more so the designer should make the design appealing to all users. In the article “The universal design file: designing for people of all Ages and Abilities”, the second principle of Universal Design: Flexibility in Use is discussed by Joines & Valenziano, (1998). According to them, the design should accommodate a wide range of people’s abilities and preferences. It should provide choice in methods of use and should cater for both right- or left-handed access and use. The design should also facilitate the user's accuracy and precision. More importantly all design should facilitate adaptability to the user’s pace.

The third principle is Simple and Intuitive Use. Rains, (2007) states that the design should be easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level. The designer should eliminate unnecessary complexity in the design and it should be consistent with user expectations and intuition. The design should also accommodate a wide range of literacy and language skills and the designer should arrange information consistent with its importance.

The forth principle is Perceptible Information. Dobkins & Peterson, (1999) in the book “Universal Interiors by Design” they explain that the design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities. To achieve this, the designer should use different modes which include pictorial, verbal, and tactile for redundant presentation of essential information. Adequate contrast between essential information and its surroundings should be provided. The designer should ensure maximize "legibility" of essential information and should differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).The design should provide compatibility with a variety of techniques or devices used by people with sensory limitations. The fifth principle is Tolerance for Error. According to Joines S (2009) all design should minimize hazards and the adverse consequences of accidental or unintended actions. Elements should be arranged to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded. The designer should provide warnings of hazards and errors. He or she should provide fail safe features and discourage unconscious action in tasks that require vigilance.
The sixth Principle of Universal design is Low Physical Effort. All design should able to be used efficiently and comfortably and with a minimum of fatigue. They should allow user to maintain a neutral body position and use reasonable operating forces. The designer should aim to minimize repetitive actions and sustained physical effort in the design. In the book “Universal Design New York” Levine, (2003) discusses the final Principle Universal Design; Size and Space for Approach and Use. Appropriate size and space should be provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility. One should provide a clear line of sight to important elements for any seated or standing user and make reach to all components comfortable for any seated or standing user. The design should also accommodate variations in hand and grip size and provide adequate space for the use of assistive devices or personal assistance. When UD principles are applied, products and environments meet the needs of potential users with a wide variety of characteristics. Disability is just one of many characteristics that an individual might possess.

### 2.2.2 Application of universal design

UD can be applied to any product or environment, such as curriculum, instruction, career services offices, multimedia, tutoring and learning centers, conference exhibits, museums, microwave ovens, computer labs, worksites, and web pages. Universal design for school design focuses on both physical spaces and in education. The researcher will only focus on the physical spaces such entrances, doors, furniture, floors, washrooms, lighting and landscape.

#### 2.2.2.1 Entrances

The design of an entrance has significant influence on both the appearance and functionality of the building. Entrances signify the point of access to a building; provide a focal point for staff, residents and visitors; and serve to welcome people into the building. A clearly visible entrance is likely to create a positive impression for all building users and make them feel welcome. If an entrance is hard to identify or if it is difficult to access due to heavy doors or narrow door width, it creates a poor first impression and make people feel less welcome or even excluded. An entrance should be easy to locate and clearly distinguished from the rest of the building.
The position of an entrance may be highlighted with architectural feature such as a canopy or door recess. There should be ample lighting for the entrance to be easily visible. (National Disability Authority, ) The entrance needs to smooth and at ground level without stairs. If stairs are to be used, alternative entrance for people with disabilities should be provided. A minimum $5' \times 5'$ level clear space inside and outside entry is required. One to a half inch maximum rise at entrance thresholds, this will as result reduce tripping hazards. (Design, 2006)

2.2.2.2 Furniture

During the selection of furniture, it’s important for the designer to consider design characteristics such as the apron, arms and seat pan heights and depths. A piece of furniture without armrest may facilitate an individual’s ability to transfer from the side of the future; however armless pieces reduce a person’s ability to use the strength of their upper body to augment their lower body strength when ascending and descending. Furniture with low seat pans may fit the popliteal height of a person shorter stature, but again may require additional effort (e.g. strength in the quadriceps) while rising. Furniture with deep seat pans may afford someone to read a book, but it may also require weaker, smaller individuals to scoot forward multiple times to gain purchase of the edge of the seat in order to rise. (Joines S., 2009) Seats should be in the range of 450mm to 475mm high and a recommended width of 500mm with firmly padded seats incorporating rounded front edges. (National Disability Authority, )

The position of furniture in any interior environment must allow an individual to navigate the wheelchair easily and safely. All common access paths should not have furniture protruding into the space and making the routes narrower than required for wheelchair access. Any passage must be at least 36 inches wide continuously, though it is permissible for passages to be as narrow as 31 inches at individual points. Each item of furniture must have a 30-inch by 48-inch approach space, though if appropriate this area can be arranged so the worker accesses the furniture from the side of the wheelchair rather than the front. The workspace must have a clear space 36 inches in diameter to provide enough area to turn the wheelchair around. Storage shelves should be placed low enough to be reachable by an employee in a wheelchair. Equipment controls should also be accessible by any employee. An especially challenging
situation involves work surfaces typically used when standing. Lowering these surfaces for wheelchair accessibility makes them unusable by other employees. Ideally the work surfaces will have height controls so each worker can set them to a preferred level. (Humphrey, 2012)

Figure 1: Illustration. High and low side reach limits

Source: http://www.access-board.gov/adaag/html/adaag.htm

Date retrieved: 25th/01/2012

2.2.2.3 Restrooms

The common problems experienced at the rest rooms include: narrow doors and insufficient turning space, lack of knee room in under the sink and insufficient area to the toilet. There are two opportunities for application of UD principles in the washroom; the toilet and the sink. The toilet should be centered at 18 inches from the wall; this will provide space for transfer to and from the toilet. The height of the toilet should be at a height same as wheel chairs. The standard height is between 14 and 15 inches however the height of a UD toilet should be between 16 and 18 inches. If it is not possible to change the toilet, a stool can be applicable. Utilization of stools may help individuals obtain a posture which facilitates bowel evacuation. A stool may help shorter individuals ascend to the toilet without aid and prevent their legs from dangling, which results in decreased circulation in the lower extremities if extended
time on the toilet is necessary. This benefit younger during toilet training, older individual with problems sitting and rising, short stature adults, and adults having recently had surgery, delivered babies, are prone to constipation, or lack bowel control owing to a neurological disorder. The installation of a lid with dual diameters for the seat opening is another UD solution to toileting support. The dual diameters enable kids and adults to both use the toilet. Grab bars made of heavy plastics are suitable in the toilet for support of the impaired.

The sink is also another important aspect as it provides hygiene to all users. Adjustable sinks are preferred as they can be raised or lowered to the level comfortable to the users. Sinks should have space under to enable access for people on wheel chairs. Clear knee space at a minimum height of 29 inches is preferred. The soap dispensers and hand dryers should also be fixed at a position that is easily accessible. The hot water at the sink should be regulated to cater for persons with reduced tactile sensitivity or numbness. (Joines S., 2009) Long mirrors should be places with bottom with no more than 36 inches above finished floor and at least 72 inches high. This will enable seated people to use it. Full length mirror is more suited. (Design, 2006) Mirrors should not be place in front of the rest rooms, so as to avoid the reflection of someone inside the rest room when opening the door. (Piotrowski & Rogers, Designing commercial interiors, 1999)
2.2.2.4 Doors

The design specification and maintenance of doors associated ironmongery can substantially affect the accessibility of a building. Doors should be easy to identify, wide enough for people to pass through comfortably and easy to operate. In order to approach and open door or to operate controls and ironmongery, sufficient space is required on both sides for a person to manoeuvre and for the door to swing or slide. (Steinfeild & Maisel, 2012). Entrance doors should visually contrast with adjacent surfaces so that they are easy to identify. Vision panels should be provided in all entrance doors. This is to enable people to see whether another person is approaching the door on the side and also to gauge the size and type of space they are about to enter. The zone of visibility should extend between 400mm and 1600mm above floor level, be at least 150mm wide and be positioned no more than 200mm from the leading edge of the door.

Source: starcraftcustombuilders.com

Date retrieved: 25th /01/2012
Where a door or fixed panel is mostly glazed or compromises a single pane of glass, it should incorporate permanent markings so that it’s clearly apparent to people at a range of eye levels. The markings should be at two levels, 850mm to 1000mm and 1400mm to 1600mm above floor level. The markings should contrast visually with the background surfaces viewed through the door in both directions and in all lighting conditions. The use of two-tone markings often improves visibility. It is imperative that the presence of glass is clearly highlighted, as otherwise it presents a significant hazard to all building users. Entrance doors should visually contrast with adjacent surfaces so that they are easy to identify. The edges of frameless glass doors should be made apparent so that they are easily identified when open and closed. This can be achieved using a visually contrasting strip at least 25mm wide on all sides of the door. It is recommended that the lower 400mm of such doors or screens should be of solid material to avoid possible damage from wheelchair footplates. Where possible, entrance doors should be automated.

Internal doors should provide a clear width of 900mm. Clear space for access and manoeuvre should be provided on both sides of the door. Where internal doors are positioned in think walls, the door should generally be located centrally within the depth of the wall. This will reduce the distance people are required to reach into the opening to access any handles or locks. Internal doors should visually contrast with adjacent wall surface so that they are easy to identify. All doors should always open into rooms and away from circulation routes such as corridors and landings. Door knobs should be avoided as they can be very difficult to grip and turn. Lever handles are generally the easiest for most people to use either by using hands gripped around the lever bar or by using forearm or elbow. Door level handles should be positioned 800mm to 1100 above or ground level, although a height of 900mm is preferred. Lever handles should contrast visually with the door so that they are easy to identify. Mental handles should be avoided wherever possible as they can become cold, making them extremely uncomfortable. Preferred handles are made of timber or plastic coated steel.

(National Disability Authority, )
**2.2.2.5 Universal design lighting**

When creating lighting for UD environments, the designer needs to consider important factors such as, the level of illumination, spectrum, direction and the level of control. UD lighting solution include: Task lighting provides light to assist in the undertaking of particular and focussed task. This type of lighting should be free of distracting glare and shadows and should be bright enough to prevent eye strain. It can be provided by recessed and track lighting, downlighters, pendant lighting as well as by portable floor and desk lamps. The other UD lighting solution is ambient lighting which is also known as general lighting. This type of lighting provides an area with overall illumination. It radiates a comfortable level of lighting level of brightness without glare and allows one to see and walk about safely. Ambient lighting can be accomplished with chandeliers, ceiling or wall mounted fixtures, recessed or track lights. (Piotrowski & Rogers, Designing commercial interiors, 1999)
Lighting fixture selection and placement also impacts an individual’s ability to use the fixture. The designer should emphasize lighting at stairs, entrances and task areas. Light switches should be place at between 44 and 48 inches from the floor. Larger rocker-style switches that are easy to turn on and off are best suited. Electrical outlets should be 18 inches minimum height; this will allow a person to easily reach without bending and from seated position (Design, 2006).

2.2.2.6 Floor finish

The selection of floor materials impacts an individual’s mobility. UD has several goals when it comes to floors. The surface should be smooth and even, to avoid tripping hazards and facilitate walking and playing as well as carts, strollers and wheelchairs. It should be firm but forgiving, able to stand up to the impact of heels, cane and wheels. The floor should be slip-resistant, non glare durable and easy to maintain. Ideally it should offer some insulation value. The pattern or design of the flooring should not only look good but also help with spatial orientation subtly identification transition points between spaces and making the perimeters. (Jordan, 2008) Contrasting color can be used to define circulation routes, such as the route between the entrance door and the reception desk. Think carpets challenge users of wheelchairs, crutches and canes. In contrast, there are disabilities, such as those creating degenerative joints and altered joint angles, where the cushion associated with a think carpet is a benefit. Hence, each social sphere member’s needs should be considered. Changes in flooring material create tripping hazards and threshold impediments. Unsecured edges, creases, or buckles in rugs can create similar and unexpected hazards. These impediments may discourages an individual from, moving with the rhythm of the house and promote a sedentary lifestyle. (Joines S., 2009)

2.2.2.7 Interior spatial movement

To improve the experience of an interior, circulation spaces ought to have equal value in relation to other spaces, so that they do not become simply transitory. Animating these spaces by providing distractions such as seating, object displays or other visual stimuli will be helpful. One particular aspect of spatial movement is circulation.
The aim of circulation planning should be to produce rational and clear paths through reception areas, for example, although the reception areas might be the starting point of an axial progression. This planning process should avoid incompatible uses and should try to minimize movement by linking related areas. (Edwards, 2011) In most situations a circulation space of between 600 and 700mm is recommended per person, this represents a comfortable personal space. Standard wheelchair users need a minimum of 1500mm diameter of space to turn around comfortably.

**Figure 4:** Illustration, Minimum passage width for one wheelchair and one ambulatory person.

![Minimum passage width for one wheelchair and one ambulatory person](http://www.access-board.gov/adaag/html/adaag.htm)

**Source:** http://www.access-board.gov/adaag/html/adaag.htm

**Date retrieved:** 25\(^{th}\)/01/2013

### 2.3 Universal design in landscaping

In Landscaping Universal design principle can be applied on the paths and surfaces. For one-way traffic to accommodate the turning radius of a wheelchair, a five-foot minimum width at paths required. For two-way wheelchair traffic, a seven-foot minimum width. Creating texture at the edge of a path will help people with low vision to recognize when they are off the path. Raised edges on a path can create a tripping hazard. Path surfaces must be firm, smooth, and provide traction to allow for easy movement of wheelchairs. Paving with deep grooves can be an obstacle.

**Figure 5:** Example of path width and design.
2.4 Reception and staffroom spaces

The reception area of any front office determines the first impression a business makes on clients, vendors and visitors. A well-designed reception area will welcome people into the building and enable them to orientate themselves. It will also allow them to gain information about the building and its services, seek assistance if required and sit comfortable in a waiting. The reception area is usually specified with a desk or counter for a receptionist, the display cabinetry, seating units and tables. (Piotrowski & Rogers, Designing commercial interiors, 1999) Comfortable seating within sight of the reception should be provided, with an adequate numbers and range of seats. Seats should be of a color that contrasts with the surrounding area. Chairs with backrests and armrests are easier for many people to get in and out of the chair. A proportion of the chairs should be without armrest for people who require more space. Seats should be moveable with adequate space in the seating layout to accommodate wheelchair users; parents with stroller; people with visual difficult; and those with walking aids. The reception desk should be placed conspicuously so that it is obvious to everybody where it’s located. The route to it from the entrance should be directed and unobstructed. The desk should be usable from both sides at a height of 950mm to 1100mm for people standing and 760mm for people sitting down or using a wheelchair. The reception desk should incorporate an induction loop for the benefit of people who wear hearing aids, and the presence of the equipment should be clearly signed. Induction loops should be used where ambient noise levels or the presence of a security screen makes communication difficult. The provision of speech-enhancement system may also be appropriate. (National Disability Authority, )

The staffroom maybe the smallest, grimiest room in school, but it’s where teachers come and go between classes, where teachers do last minute preparation. It’s a haven from prying students, a place to relax; a friendly meeting place for informal conversation and witty banter. A study done by Jane McGregor at the Open University showed that it the staffroom is not of a reasonable standard and well equipped, most teachers will find a more pleasant alternative. The research also found out that a clean kitchen area, quiet work place with good computers; telephone links
and photocopiers were top wishes of teachers. (Hastings, 2008). The staffroom is used as a place for work (office), a place for eating, drinking talk (café), a place to escape (Refuge), a place to store books (library), a place to find out information (notice board), a place to store personal belongs (store room) (Clandfiel & Foord, 2008). The staffroom should be warm, comfortable and welcoming. It is specified with couches, chairs, coffee table, flat-screen TV, microwave, bulletin board and cabinets- (Jones, 1999-2021)

2.5 Sustainable Design

Like other design fields, interior design is inextricably tied to changing styles—what's hot and what's not. Whether the ultimate design goal is decoration, renovation or architectural detailing, all interior designers must stay abreast of current trends in the field. What's hot now? One increasingly widespread practice in recent years has been the incorporation of sustainable or "green" interior design. Sustainable design has emerged as guiding the paradigm in the creation of a new kind of built environment; one that ‘meets the needs of the present without compromising the ability of the future generations to meet their own needs’ (Kang, 2006) There is a clear need for interior designers to take a lead in sustainable practice, particularly as many clients and users are often unaware of the issues and possible solutions. The sustainability issues are in the everyday world and are not simple options. This means that interior designers will have to increase their engagement in with what it means to be environmental sustainable. This can be achieved initial by ensuring that their own practice is environmentally responsible, that they foster and educate environmentally appropriate attitudes in all the stake holders they come into contact with and that they maintain continuing professional education. The design practices and processes must integrate sustainable issues at all levels, whether related to energy choices, material selection or the impact on an environment of a particular plan. Continuing evaluation and critical assessment of every stage of the process is essential. (Edwards, 2011).

In interior design sustainability can incorporated thorough various ways. The designer can maximize the efficient use of space which as means that minimum construction materials and other resources will be used, they can work with windows and doors that
maximize energy efficiency, wood flooring that comes from rapidly renewable sources like bamboo, water-saving toilets and other environmentally responsible materials, designers can also use reclaimed or recycled materials for decorative items and furniture to reduce waste or can incorporate windows and skylights to maximize the use of daylight and minimize artificial light. When artificial lighting is needed, LEDs and compact fluorescent light bulbs save energy and last longer use.

2.6 African contemporary interior design

Africa is a vast continent sprawling from Egypt and Morocco in the North down to South Africa, Namibia and Mozambique in the South, with each and every country having its own unique style. (Afro Style Magazine, 2010) Africa-themed interiors are becoming very popular, and because of their recent increase in popularity, this style has begun to fall prey to clichés. African elements - such as animal prints, artwork and native motifs - should play a beautiful part in this style, but can easily be overdone. (Lee T. )

African contemporary interior design is a simple, classic look. The space should not look too cluttered or fussy. (Brown) Lines and space are important in this design, geometric shapes, bold color blocks, high ceilings and bare windows can be identified. Since the style bears minimalism as its base the decor is simple as well. African artifacts such as handmade leather purses and pouches, walking sticks, smoking pipes and even warrior masks and shields can be combined with the interior in a minimalist style, or hi-tech (Afro Style Magazine, 2010).

African contemporary interior design is a look that gets its strongest inspiration from nature; this fact is portrayed in the floor finishes. Naturally-looking fabrics that have cotton, linen, wool or silk, jute textures work well in the contemporary designs. It is based around rich colors found across the vast landscapes of Africa. From massive grasslands to deep jungles, Africa encompasses a variety of colors. Earth tones are typical to African contemporary design and are found in a variety of neutral colors, such as creams, whites, browns, blacks and taupe. Warm neutrals such as creams, beige, coffee and taupe are commonly used for walls. Bold colors, such as red or yellow which symbolize the hot sultry climate, are for accent and focal walls. (Brown). Interior design in school reception and staffroom falls into two categories:
fixtures and coverings/finishes which can be categorized into three: floor coverings/finishes, wall coverings finishes and ceiling coverings/finishes. The mechanical interface is also an important aspect in the two spaces as it shows the electrical, telephone and data communication services.

2.6.1 Finishes and Coverings

2.6.1.1 Floor Finishes and coverings

Flooring can make a dramatic difference in the appearance of any space. It will enhance the ambiance of a space. Good flooring elevates the elegance of a space instantly and it adds an ineffable quality to the space. It’s important for designers to consider the function and the aesthetic appeal on a space when selecting the floor finish. There are many available floor finishes and they include: Oil based urethane, sheen, wax, moisture-cured urethane and lacquer. A finish is a seal that protects hardwood, cement tile and stone floors from wear and tear. The finish will reduce dirt and moisture damage and will enhance a floors beauty with colour and lustre. Most floor finishes last many years. Popular floor fishes include, Oil based urethane Sheen, Wax, Moisture –cured urethane and Lacquer floor (Barnhaurt, 2012).

Oil based urethane, which is available in gloss, semi gloss and satin sheets. It resists chemicals, scuff and scratches, its down fall is that it takes many hours to dry due to several coat application. Sheen is a type of floor finish that penetrates the wood to form a protective seal. It comes in high gloss, low semi and satin. Scuffs and scratch do not show as much with low gloss or satin. Wax is the oldest type of wood finish. It is easy to apply and dries quickly; wax is easy to keep clean and buffed. It is usually applied in thin coats over a sealer and it can last a long time if carefully maintained. Moisture –cured urethane is solvent based polyurethane. It’s moisture resistant and very durable. It’s available in satin and gloss formulas that are none yellowing, and one that will look like amber when it ages. Lastly, Lacquer floor finish is a synthetic sealer made of cellulose derivatives, it dries quickly but it non resistant to spills, moistures or dampness. It’s also flammable. (Barnhaurt, 2012)

There are three basic categories of floor coverings: hard surface-concrete, wood, stone ceramic, and terrazzo. Resilient surfaces – vinyl composition tile, sheet vinyl, rubber
and linoleum. Soft surface: carpets and area rugs. In African contemporary interior design nature is the source of inspiration; therefore natural floor coverings are vital. Plain, hard wood flooring is best – choices include teak, mahogany and bamboo. Tiling the floor with sandstone tiles or terracotta tiles have become popular. Plain concrete floors that have been treated and stained are also very popular these days.

Teak has a long list of both positive and negative associated with its harvesting and use. On the plus side, it’s a beautiful, durable wood that has a high resistant to decay and termite attack and a hardness that falls in between black cherry and black walnut. Its natural oils make it popular choice for use in exposed location, where it is durable even when not treated with oil or varnish. Teak does not splinter, and it’s water resistant, which alleviates concern over it rotting from water exposure. On the minus side, two of the three species of teak are endangered and, all have been subjected to unsustainable forestry practices for decades. (Dunn, 2012) Mahogany wood flooring has increased in charm and reputation over the years. It is usually available in either darkish or auburn colors. (Jesica, 2012) It has a natural beauty and elegance to it, is very durable, it’s naturally resistant, and can withstand the harness of time for many, many years. Red mahogany has even greater advantage in comparison to normal mahogany, due to the fact that it is resistant to termites. (F.Alexa, 2010)

Bamboo flooring; As a natural material, bamboo is a certified "green" material that has been utilized recently in the construction and renovation of building following "green" construction practices. (Thormpson, 2010) Bamboo flooring is durable, elegant and comes in variety of colors usually raging from honey brown to light brown. It provides a strong, clean surface, but could darken over time or when exposed to sunlight. It should not be left to wet. Manufactured bamboo floors are typically available in planks, with vertical or horizontal –grain orientation. (Rodriquez, 2012) Sandstone tiles are one of the strongest floor tile materials available, come in a large variety of natural, earthen colors. They are useful in high-traffic areas because of the durability of its surface. Properly installed and consistently maintained, sandstone tiles will last for a long time. Terracotta tiles are desirable where there is high traffic due to its durability. It is also water proof so can be used in wet areas and it is easy to clean. Concrete has a proven record for strength, durability, and cost effectiveness for a variety of applications including floors, walkways, patios and driveways. Concrete
floors are found in a variety of residential settings, from high-rise condominiums, to basements remodeled for extra living space, and to slab-on-grade construction. (NAHB Research Center, 2001)

**Figure 6:** Teak flooring

![Teak flooring](haleikelani.com)  
**Source:** haleikelani.com  
**Date retrieved:** 23/01/2012

**Figure 7:** Bamboo floor

![Bamboo floor](4windsbamboo.com)  
**Source:** 4windsbamboo.com  
**Date retrieved:** 24th/01/2012

2.6.1.2 Wall finishes and coverings

Wall finishes are available in various forms as paints, wall papers, fabrics and flexible materials. Paint is an easy, quick and inexpensive way to get the one wants. Interior paints vary from high gloss to flat to dull finish. In general the glossier the paint the more washable it will be. It’s widely used in work, kitchen and play areas.

Paint and paper are the most widely used wall finishes others include tiles fabrics cork, carpet paneling and linoleums. Paints are of two general types: water soluble and oil based. The water soluble also know as latex, acrylic or polyvinyl paints are easy to
apply, fast drying and have little odor and fumes. They touch up easily, will not darken with age, and are simple to clean up. The disadvantages are that one coat may not cover and it may have a dull lifeless look. Oil based paints; called alkyd paints are durable and scrubbable. They have a higher pigment concentration and therefore have goo one coat hiding power. They produce a richer, smoother kind of a finish but are more difficult to apply. There is a slight odor and color may darken in time. Wall paper and other flexible coverings offer a wide variant of color, patter and textures. Wallpapers can be classified into three types the non washable, or water sensitive, must be cleaned with commercial type cleaner. The water resistant type of finish may usually be cleaned one to three times with mild soap or detergent. Many changes have been made in paper, finishes and printing. The addition of plastic resins produces strong paper. Some are treated to resist bacteria and mildew. Trimmed, pre- pasted papers are available. Strippable paper can be pulled from the wall and reused, providing that oil base premier is used on the wall.

Vinyl wall coverings are available are a more recent development there are several types of ranging from vinyl- impregnated with a man made base. These are durable and easy to maintain but more expensive than paper. Vinyl is also available in hard surface tiles and rigid panels. There are fabrics made especially for wall coverings which come with a paper backing. Grass cloth is an example. Many kinds of firm, closely woven fabric can be used. Some possibilities are sheeting, burlap, canvas, ticking, and chintz. Brocades and damask provide riches and elegance. Felt is a good choice. It come in a wide range of colours, and often is treated to be soil and flame resistant. Felt, carpet and other fabrics can improve the acoustics in a room. They are several ways fabrics can be placed on the wall. They may be pasted, held in place with double faced tape, “upholstered’ to wall with a tacking strip, or stapled or tacked to wooden strips. (Pfischer, 1977)
2.6.1.3 Ceiling finishes and coverings

A ceiling style and covering add architectural and aesthetic qualities to the room. Ceiling styles and coverings can be combined to create a unique environment and accent the era and style of the home. High ceilings add a distinctly open feel to the room. Lower ceilings create a closer, cozier environment. The material used for a ceiling should be appropriate for the room's purpose. Some common choices are drywall, plaster, wood, tile and metal. (Shirey, 2012)

Drywall ceilings are usually fastened directly to the ceiling joists and their joints are taped and mudded to make them invisible. Such a large, flat surface can be a source of echoes if left smooth, so the drywall ceiling is often textured to deaden sound and to cover any imperfections in the installation. Common textures are popcorn, splatter and orange peel. Prior to the 1930s and 40s, lath and plaster was the most common material of choice for walls and ceilings. Plaster is a very versatile material and can be applied over all sorts of substrates, such as stone, brick or wood, and it can be easily molded and stenciled into decorative shapes and patterns. Like drywall, it is often textured and for the same reasons.

Wood ceilings can add a dramatic accent to a room, whether it is a simple covering of tongue-and-groove planks or a series of wood beams. Drywall or plaster ceilings are often highlighted by the addition of decorative wood beams, and if it is practical, structural wood beams are often left exposed for their effect. Exposed or decorative beams give a space the feeling of solidity and permanence. Mineral fiber acoustical ceiling tiles suspended in a metal frame is the most popular ceiling treatment for commercial buildings. The same system is often used in private residences, especially in basements, to lower the ceiling or to cover wiring and plumbing. Acoustical tiles may also be attached directly to ceiling joists, furring strips or a substrate such as drywall. The typical dimensions of an acoustical tile are 300 by 300 mm and 300 by 600 mm. The architect's main objective of assigning acoustical tiles to a particular space is to control the acoustical properties of that space. Acoustical tiles can achieve two types of sound control: sound isolation and sound reflection. Acoustical tiles that are porous and lightweight are the best at absorbing sound.
Stamped metal ceilings are highly decorative and can give a home a historic look. They were popularized in the United States shortly after the Civil War, and they are enjoying a new popularity. Durable and easily installed, they are usually stamped with a three-dimensional pattern that can be painted or left as is. Tin, copper, brass and chrome finishes are now available from a large number of suppliers. (Shirey, 2012) Gypsum wallboard is made from crushed gypsum sheathed in paper (smooth on the faced side and natural on the backside). It is one of the most common ceiling coverings in use today. Gypsum gives the appearance of plaster without the need for lath backer strips or the high degree of skill required to apply plaster. Gypsum is suitable for painting or as a base for popcorn ceiling and most other textured finishes. (Home Renovation, 2012)

**Figure 8:** drywall ceiling

![Drywall Ceiling](http://designiteriors.ae)

**Source:** http://designiteriors.ae

**Date retrieved:** 25/01/ 2013

**Figure 8:** wood & wood beams ceiling

![Wood Beams Ceiling](https://beams-ceiling.beamss.info)

**Source:** beams-ceiling.beamss.info

**Date retrieved:** 25/01/ 2013
2.6.2 Fixtures

Lighting has a major effect on the mood and design of any space. It can make a room bright and cheery or dark and romantic. It can make you feel relaxed, comfortable or inspired to complete a task. Lighting includes the use of both artificial light sources like lamps and light fixtures, as well as natural illumination by capturing daylight. Indoor lighting is usually accomplished using light fixtures, and is a key part of interior design. In interior design, lighting has three major aspects: the aesthetic or design aspect, the human needs aspects and the economic need.

In terms of Aesthetics and design, light is the major enable in assisting perceptions of interiors; however it is far more than that. Light enables knowledge of surroundings and it defines various spaces, zones and boundaries within spaces. It creates aesthetic moods and effects, identify ‘place’, accentuate form or create shadows in chosen parts of the interior. More than, this light affects, our emotions and our physical and mental well-being. Secondly in terms of Human needs and lighting, light plays a crucial part in life. Humans react to what they see: therefore, lighting is very important in people’s
responses to situations and spaces. Lighting can influence people’s reaction to spaces in terms of perceiving a sense of pleasantness, relaxation, intimacy, apprehension and clarity. And in terms of economic need, the issues that center on economic aspects include initial cost, the installation process and matters of maintenance and operation. (Edwards, 2011)

Lighting fixtures come in a wide variety of styles for various functions. The most important functions are as a holder for the light source, to provide directed light and to avoid visual glare. Some are very plain and functional, while some are pieces of art in themselves. Nearly any material can be used, so long as it can tolerate the excess heat and is in keeping with safety codes. An important property of light fixtures is the luminous efficacy or wall-plug efficiency, meaning the amount of usable light emanating from the fixture per used energy. The more transparent the lighting fixture is the higher efficacy. Shading the light will normally decrease efficacy but increase the directionality and the visual comfort probability. Lighting is classified by intended use as general, accent, or task lighting, depending largely on the distribution of the light produced by the fixture. (The House Designers, 2013). Task lighting is mainly functional and is usually the most concentrated, for purposes such as reading or inspection of materials. Accent lighting is mainly decorative, intended to highlight pictures, plants, or other elements of interior design or landscaping. General lighting or ambient light fills in between the two and is intended for general illumination of an area. (Edwards, 2011) For successful lighting of the reception and staffroom spaces all the three types of lighting can be applied.

Ventilation is another important fixture in interior spaces. Proper ventilation in any type of building is very important to the health of everyone who lives or works in the space. Indoor air quality can make a huge difference in the way people feel, both in terms of physical well being and mental balance. The most basic of all types of room ventilation is natural ventilation. A common approach to this method is the strategic installation of windows within the room. Opening windows from time to time makes it possible to rid the space of stale odors, as well as allow different types of airborne pollutants to be expelled from a room with relative ease.

While open windows are an excellent example of room ventilation, they are not always the best health option in cases where there air pollution from sewages of
manufacturing company. Fortunately, there are other ways to achieve room ventilation, which will include the installation of some sort of air system to routinely refresh the air within the space. One simple solution is the installation of an exhaust fan, which makes it possible to draw stale air from the space while also allowing a small amount of fresh air to enter the room. (Conjecture Corporation, 2003)

Plumbing fixtures are equally important in a space, more so in the washrooms. A plumbing fixture can be any device that is connected to a plumbing system and interacts with water -whether it be delivering the water or draining it. Each plumbing feature will be designed for a particular use, and while the core design will be the same for many of these items, the use and design can vary; depending on the device they can be practical or ornamental and generally are designed with one function in mind. In the washroom the plumbing fixture include; sinks and toilets.

A sink is a bowl shaped plumbing fixture that is usually used for washing hands, dishes and other small objects. Often called a basin there are usually several types of sinks. The sink will have a faucet (or faucets) that provide both hot and cold water, and sometimes come with a spray that allows a sustained strong stream of water. Sinks usually have drains and sometimes integrated soap dispensers. Sinks come in many shapes and varieties. The most common sinks are: Self-rimming sinks, Bottom-mount sinks, Solid surface sinks, Stand-alone sink and Butler sink which are generally seen in bathrooms and consist of a rectangular sink with a rounded rim that is set into a wooden cabinet or wooden surface. They are smaller than kitchen sinks. A toilet is probably the most important plumbing fixture of them. It is one of the more complex plumbing fixtures with a complex system to refill a tank used to flush the toilet, complex plumbing to ensure proper flow of waste. The modern toilet has a flush system that moves waste to a septic tank or a community sewerage system. There are many forms of toilet, the most common are: Flush toilet, Urinals, Dry toilets and High Tech toilets. (Cook, 2011)
2.6.3 Mechanical interface

The planning of electrical, telephone and data communication services to the stations is critical to overall design. In order to properly plan the electrical system for panels and determine the type of electrical services needed, the designer must know the amperage of common office equipment that will be placed in the stations. There are several building interface for electrical services, this includes through walls, through drops from the ceiling plenum, by a poke through system, raised floor etc. Telephone and data communication is handled in a very similar way to the electrical. Technology has created intense demand on the intense demands on the communication interface in offices today. The designer needs to clearly understand what types of computers and printers are being used and how they are networking. (Rogers, 1999) Mechanical interface will be considered in the reception and staffroom working area where there are computers and printers.

2.7 African contemporary furniture design

Furniture spices are designed and fabricated to assist in many ways people sit and rest, work and play, organize or display items and partition space. This view suggests abroad utilitarian frame work in which function is perceived to be the primary intended purpose of furniture. Although function, utility and social use are important aspect of the performance of furniture, rarely does function alone inspire great design. Furniture design is deeply rooted in the human condition. It’s a social science that belongs to the humanities, an applied art that drawn upon many design disciplines and is dependent upon a working knowledge of materials and fabrication techniques. It’s a holistic and interdisciplinary field of study. Furniture provides a setting for work, rest and play. It also contributes to the ambience and style of inter spaces. Furniture provides people with desired items and necessary equipments that complement and complete interior spaces. (Postell, 2009)

Designing hospitality furniture- furniture designed and fabricated for public and social interchanges; requires much consideration on accessibility, durability and flexibility as hospitality furniture accommodates abroad range of users and uses. (Postell, 2009) There are three types of furniture that can be found in the reception and staffroom areas; seating which include chairs and sofas and couches; surface which include
accent tables, desks and coffee tables; storage which include cabinet, bookcases, and shelves. Storage furniture will mainly be found in the working spaces of the staffroom. Furniture can also be classified into moveable and non moveable.

Besides it’s functional and home decor values, African furniture can also be dramatic symbolic expressions of messages and guiding principles. These messages and principles act as a fabric for the peaceful existence of the tribe or the society as a whole. Each African furniture piece is designed to accentuate the traditional stature and purpose. (African Creation, 2012) Furniture with a contemporary African flair usually incorporates lots of solid dark wood such as mahogany, teak or walnut for preference, as well as bamboo and rattan. Upholstered furniture is comfortable, but not bulky. Dark brown leather or cream/neutral linens or cottons are popular choice for sofas. For a dramatic African feel, furnishings that fall into these rich tones and add texture and color with throws and pillows are used. Hand carved chairs and stools are also common to African furniture design. Furniture for the African interior design look should be simple, solid dark wood. (McGee, 2012)

2.8 African contemporary Exhibition and Display

Making exhibition is increasing recognized as a significant form of creative expression. It is multidisciplinary and it boundaries are complex. To exhibit is to hold out, to offer, to display object or works; to expose. Fundamentally, exhibition making is focused on the content of the works to be displayed and concerns with the condition of the viewing environment. Above all exhibition design considers the simple dialogue between the objects to be exhibited and the space they are presented; where the objects are, and how they are arranged will determine the nature the message they communicate. (Dernie, 2006). Exhibition stands include modular exhibition are available for instance, notice boards, panel display and roll screen. Secondly pop up exhibition stands which are portable and include fabric kits, tower ups and banners. (Daleen)

Displays are human-made artifacts designed to support the perception of relevant system variables and to facilitate further processing of that information. Before a display is designed, the task that the display is intended to support must be defined (e.g. navigating, controlling, decision making, learning, entertaining, etc.). A user or
operator must be able to process whatever information that a system generates and
displays; therefore, the information must be displayed according to principles in a
manner that will support perception, situation awareness, and understanding. There are
many types and uses of various display units. Display stands they are available in
various styles and designs which are portable and easy to use. Different types of
portable stands for display purpose are;

Folding stands; these can be folded when not in use and can be easily assembled when
needed for use. They require little space and can be easily assembled by an individual.
Desktop stands these are portable, easy to use and lightweight and do not occupy
much space on the desk. They are available in an array of color, shapes and sizes.
Office screens; these are highly functional display unites. They can be used to display
the products and services of a company. Desktop office screens; these are in
rectangular and when four are kept adjacent to each other, they create an enclosed and
private (Thomsons, 2009). When designing any display, the designer should base their
concept on the needs and wants of target audience in relation to the display. The
display created should take into account height intended. All displays should be eye
level to the intended user, and a display’s legibility is critical and necessary for
designing a usable display. If the characters or objects being displayed cannot be
discernible, then it does not serve any purpose. Lighting on displays should be taken
into account. The intensity of visible light in the display space should be low enough
to avoid object deterioration, but bright enough for viewing. Lighting can be used to
highlight a particular display item indoor to attract more attention. Other creative uses
of light include using angled light boxes and coloured light.

In an African contemporary interior space, the display items commonly used include
Artifacts such masks, shields, spears, walking sticks, knives, containers, snuff boxes,
pipes, musical instruments, and headwear. Fine Arts: paintings, prints, photographs.
Sculpture: wood, metal, stone. Found objects, natural and discard. Not all above items
are displayed together at once, since African contemporary interior design is based on
simplicity and clutter free. The designer will decide depending on the type space being
designed and the theme of the overall design. The items selected should complement
the overall design. For a school reception it’s in the exhibition and display that the
school is able to show various works done by students to the parents and guests.
2.9 African contemporary Landscaping Architecture

Landscaping is frequently a cyclic process, which involves a sequence of steps, in the form of decisions or activities that result in the accomplishment of a goal. (Ingles, 2004). Contemporary landscape architecture is characterized by a subjective determination to sculpt the landscape into spaces that reflect the human living experience. It develops these spaces with respect to Nature, and in some way or another always works to create a relationship between architecture and the contemporary landscape. Contemporary landscape architecture can be used either to unify architecture and the surrounding landscape, or it can be utilized to starkly contrast the differences between the two. The exact nature of the relationship is always determined by the project itself, its location, and the type of environment being worked in. Because it flows along the lines of contemporary design in general, and because of its highly subjective characteristics, contemporary landscape architecture can be found in almost any setting where the experience of living itself is used to create forms and structures outdoors.

There are two types of scapes; hardscape and softscape. Hardscapes can be formal or informal, depending on the style of the building and surrounding landscape. With hardscaping, textural variety is important and should be considered carefully. On the one hand, using only one texture or material can make the area appear dull and lifeless. Yet, using too many textures can make the surrounding area appear unattractive and cluttered. Common hardscape feature, in addition to patios, decks, driveways, outside structures and the like, there are many types of Hardscaping features to choose from. Walkways and paths are common elements within the landscape, which are oftentimes designed using hardscape materials such as bricks, pavers, woodchips, flagstones, etc. Retaining walls consisting of rocks, concrete blocks, railroad ties, and similar items are also common hardscape features. You may also find hardscaping features such as wooden or stone steps and various types of edging materials included within the hardscape garden design.

Softscaping is the living, animated part of a landscape. Due to the advancement in landscaping design programs, softscaping can easily be experimented with before implementing the subtlest of ideas and changes in a landscaping area. Softscaping can
be both permanent such as evergreen trees and shrubs as well as temporary, such as seasonal plants which lend their color and character to pathways and driveways. Planning and arrangement of these elements in an aesthetically appealing manner is the cornerstone of effective softscaping. A great combination of hardscape design and softscape decision guarantees a landscaping masterpiece.

Over the years gardens have used for various reason ranging from healing purpose, meditation, aesthetics, etc. Gardens can either be indoor or outdoor. Indoor gardens can be created in a building that lacks enough space for outdoor garden. Indoor gardens can be created in balconies, patios, or lobbies. The indoor gardens are beneficial in that they create a garden feeling within a building. However outdoor gardens are more beneficial because they do not only have plants but also types of garden expose people to fresh air from the wind and also direct sunlight. There are many types of gardens that can be created in a space: Rock Gardens, water gardens, Rose gardens, shade gardens, herb garden, Perennial Gardens etc. Each garden has its own characteristics unique to it. For example, water gardens are characterized by water features such as ponds, waterfalls fountains, and streams weeping walls.

2.9.1 Designing and Installing Outdoor Lighting

Lighting is very important aspect in landscaping. It can be used in a landscape to provide safety, security, accent, and character. The specific design of a lighting system will be influenced by a variety of things, including the site characteristics, the scope of the landscape, its function, and the client’s desires. There are many types of outdoor Lights; up lights, down lights, back lights, path lights and special lights.

Up lights are lights placed at ground level with the lights aiming upward to highlight focal points in the landscape, such as specimen trees, signs, and architectural features. The lights not only highlight features from the outside, but they also provide for an extension of the interior living spaces at night. Fixtures of this type may include spot or flood lights as well as in-ground fixtures. Down lights are lights placed above an object or area and aimed downward to imitate natural light such as simulating moonlight, or for providing security to an area, such as at back entrance. Care should be taken to hide or shield these light fixtures from view to create a true natural light. Fixtures of this type include spot or flood lights. Backlights are lights placed behind...
artistic objects or plant material to cast a silhouette on a wall for a striking effect. As with down lights, care should be taken into account in placing the fixtures so that they are hidden from view. Lights of this type may include spot or flood lights as well as in-ground fixtures. Path lights are lights placed just above grade level along sidewalks, driveways, or informal paths in the landscape to safely lead a person from one location to another. Path light fixtures are generally low to the ground and cast a spreading light. Lastly specialty lights are lights that add accent to a space, especially in the evening. Their purpose is to set a particular mood or create atmosphere. Examples of specialty lights include string lights in a gazebo, lights that resemble patio torches and/or flickering flames, and lights used in underwater settings to highlight a waterfall or rock bank (Weber Electrical Supply, 2000)

2.9.2 Plant selection

Aesthetic judgment in relation to landscape design is inventive personal and this is particularly in the selection of plants. There are various factors to be considered when selecting plant, including, pre-existing plants, garden size, color preferences, quantity, the overall form, and texture and planting design.

Pre exiting plant may limit a design. With the exception of trees, it is usually easier to remove pre-existing plants than to design around them. One can save the plants to incorporate into their design or move them to another area. The garden size is also factor. Obviously the smaller the garden space, the less plants you can have in it. This is especially true if one choose to use a large, focal point plant. A small space will look cluttered fast if there is too much diversity. For Color Preferences one should limit the plant choices to 2-3 colors, maybe even only 2-3 different types of plants. Quantity of plants needed depends upon the size of the space and the width or spread of the plant.

The form of a plant refers to its overall shape and to the arrangement of its branches, leaves, buds and flowers. The natural form of plants can be influences by external factors such as exposure to prevailing winds, infertile soils or drought. The landscape design techniques can also influence the natural form of plants. The textural character of a plant arises from the impact of all its parts- the size, shape and surface of the leaves, the way they overlap to create shadows, the nature of the leafs edge and the texture of the trunk and of the branches. Leaves may be glossy or dull, smooth or hairy,
consistent or uneven. The planting design is an important aspect in the overall landscape design. There are three types of planting designs: symmetrical planting design where plants are planted in straight lines with well rectangular shaped and trimmed hedges Formal asymmetrical planting design, where by plants and paths do not follow any geometrical shapes or straight lines. Lastly there is naturalistic planting design where by the designer works around existing features such as streams, rocks, slopes etc.

In African contemporary, the exteriors can also echo African nature with indigenous planting and landscaping including using sculptures for dramatic focus points. Africa is a large Continent of many contrasts. You have many miles of coast. Mountainous regions in the south, Arid deserts in the north, Sub-Saharan rain forests, Freshwater lakes and rivers, Island nations such as Madagascar. All of these different soils and precipitations produce vastly differing blooms and they include:

<table>
<thead>
<tr>
<th>Pennisetum clandestinum</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Pennisetum clandestinum</em>/<em>kikuyu</em> grass is a tropical grass as it is native to the region of East Africa. It grows rapidly. It occurs in sandy soil and reaches a height of between 70 to 150 millimetres. The species favours moist areas and frequently becomes naturalised from introduction as a cultivated alien.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Anthurium</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Anthurium</em> grows in many forms, mostly evergreen, bushy or climbing epiphytes. The simple leaves come in many shapes; most leaves are to be found at the end of the stems. Leaves may be spatulate, rounded, or obtusege from leathery to fragile and papery. They may surpass 100 cm in height. It is both an indoor and outdoor plant.</td>
</tr>
</tbody>
</table>
| **Arctotis fastuosa** | Arctotis fastuosa is a commonly cultivated African daisy that grows 24 inches (60 cm) in height and 12 inches (30 cm) wide. Typically, the flowers sprout from midsummer to early autumn. This plant thrives in well-draining soil that is acidic to neutral in pH. It tolerates loamy and sandy soil. A. fastuosa should be planted in an area that is exposed to direct sunlight.  
source: http://professionalgardening.com  
date: 4th /01/2013 |
| |  
| **Aloe** | Aloe, also known as the medicinal aloe, is a species of succulent plant that probably originated in Northern Africa. Aloe grows in arid climates and is widely distributed in Africa, India and other arid areas. While capable of achieving a height of 3 feet, aloe plants more typically mature to be 1 or 2 feet tall. Grow in full sun to partial shade and in a well-drained soil. These succulents are drought tolerant plants once established.  
source: http://en.wikipedia.org  
date: 4th /01/2013 |
| **Gazania** | Gazania flower is native to Southern Africa. They produce large, daisy-like composite flowers in brilliant shades of yellow and orange, over a long period in summer. They are often planted as drought-tolerant groundcover. 6-10 inches. Gazania flowers thrive in full sun. The daisy-like flowers grow in a variety of hot hues on the color wheel.  
source: http://en.wikipedia.org  
date: 4th /01/2013 |
<table>
<thead>
<tr>
<th>Source</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
</table>
| plantedcloud.blogspot.com    | 4th/01/2013   | **Somali Hemp**  
Scientifically know as Sansevieria grandis. It’s a Drought-tolerant plant that grow to height of 6-12 in. (15-30 cm) or 12-18 in. (30-45 cm). Flowers are fragrant. The plant requires 3-6 in. or 6-9 in. space between each other when planting. |
| http://www.ehow.com           | 4th/01/2013   | **Bird of paradise flower**  
The bird of paradise flower, also known as the crane flower, is a native of South Africa. The plant is easy to maintain and it grows 3 to 5 feet tall and has leathery green leaves that average 18 inches long, although some varieties have leaves more than 70 inches long. |
| http://www.prestoimages.com   | 4th/01/2013   | **Ietes iridioides**  
The African iris is a perennial flower originating from Eastern Africa. The Africa iris thrives in areas with full sun. Its flowers last only for one day, and its stalks are 2 to 4 feet (0.5 to 1.2 m) tall and capable of supporting a cluster of buds that continuously blossom from early spring to late summer. |
<table>
<thead>
<tr>
<th><strong>Weeping lovegrass</strong></th>
<th><strong>African Moon</strong></th>
<th><strong>Alyssum Flowers</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Weeping lovegrass is a warm-season, perennial bunch-grass that grows to a height of 2 to 4 feet. It originates from East Africa, it has rapid growth and produces a great many basal leaves 10 to 20 inches long and 1/4 inch wide that taper to a needle like point. A single plant may form a dense sod bunch 12 to 15 inches in diameter within two to three years.</td>
<td>The African Moon is the white daisy flowers, native of Namibia. African Moon flowers are also commonly called as Oxeye daisy, Rain Daisy, Cape Daisy, Witbotterblom. African Moon flowers are about 2 1/2 inches in diameter and it grows to 8-12 inches. The flower blooms can be yellow white and orange.</td>
<td>Alyssum flowers are popular for border plantings and rock gardens. In the latter, their foliage will cascade nicely over the rocks. This tough ground cover prefers sun and thrives in well-drained, poor soil. Perennial alyssum plants are drought-tolerant.</td>
</tr>
</tbody>
</table>

Date: 4<sup>th</sup> /01/2013  

source: [www.theflowerexpert.com](http://www.theflowerexpert.com)  
Date: 4<sup>th</sup>/01/2013  

source: [Ktcatspost.blogspot.com](http://Ktcatspost.blogspot.com)  
Date: 4<sup>th</sup> /01/2013
2.10 Conclusion

The essence of the extensive reading by the researcher was actually to get relevant information concerning universal design and its application in interior environments of school reception area and staffroom area which helped the researcher in making recommendations. Design of interior environments should be useable to all users; it should accommodate people’s diverse abilities and preferences.
CHAPTER THREE

3.0 Methodology

3.1 Introduction

This chapter contains methodology discussion. A qualitative research approach was employed for this study. Aided by this research approach, the research study aims to investigate different ways in which universal design can be applied in design of Rusinga school reception and staffroom spaces. Methodology will include collection of primary and secondary data and qualitative methods. This will be a qualitative research employing mainly inductive reasoning based upon its objectives. Secondary data will be collected through the review of literature concerned with the subject matter from publications such as books, reports, articles, journals, academic papers as well as web sources. Primary data will be collected from selected group of students, teachers, subordinate staff, guest/parents and receptionist. Much of the information therefore will be collected through in-depth interviews, non participant observation and examination of records. Analysis of the data collected will involve field notes, records and visual observations that can only be submitted as photographs.

3.2 Research Design

There are two approaches used in research, qualitative and quantitative research. Qualitative research aims to help understand social phenomena in a natural rather than an experimental setting while emphasizing the experiences, attitudes, and views of the participants rather than providing quantified answers to a question (Nieswiadomy 2008). Qualitative research obtains data usually in the form of words, based on observations and interviews, rather than numbers which is the basis for quantitative research (Fawcett & Garity 2009). A qualitative approach appears to be more suitable to explore the research question within this study; as the main focus is on investigating ways of incorporating universal design principles in school reception and staffroom spaces. There are different research designs within qualitative research which include phenomenology, grounded theory, exploratory, and descriptive (Burns & Grove 2011). In this study, a descriptive qualitative approach will be used to explore the research question as this is well suited to the study of human experiences. Most of the data will be presented in descriptive form while statistical data will be presented in tables.
3.3 Target Population and sample design

The population is the entire group of people the researcher wishes to obtain knowledge from. A selection of these individuals is taken from this population and is known as the ‘sample’ (Gerrish & Lacey 2006). The sample will provide the information and data for the study. Non-probability samples are more useful with qualitative research as “the purpose of qualitative research is to contribute to an understanding of phenomena” and the sample can be ‘chosen’ to best provide the required data for the study.

The target population of interest for this research included students, teachers and parents/guests and subordinate staff. Due to large population of people using both reception and staffroom spaces per day, the researcher found it useful to do random sampling. The sampling allowed the researcher to narrow down the population of 200 persons who use the reception per day and selected 50 people to carry out the research. Throughout the research, the researcher ensured that there was balance in gender and age. For the reception, the research was conducted on a sample that consisted of 13 parents/guests, 1 reception, 20 students, 10 teachers and 6 subordinate staff. For the staffroom the population of interest consisted of teachers and subordinate staff, the participants were also selected through random sampling techniques, which enabled the researcher to cut down the population of 100 persons to 25 people who formed the research sample. The research was conducted on 14 teachers and 11 subordinate staff. The teacher & subordinate population sample for the staffroom include the sample used for the reception. The researcher used interviews and questionnaire on the sample population. The total sample population summed to 60 persons where 20 people were interviewed and 40 people were given questionnaires. The tables below show the distribution of the reception sample and staffroom sample and population sample for interviews and questionnaires.
Table 1: A representation of the reception sample population

<table>
<thead>
<tr>
<th>Population target</th>
<th>Frequency</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents/guest</td>
<td>14</td>
<td>28</td>
</tr>
<tr>
<td>Teachers</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Students</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>Subordinate staff</td>
<td>6</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 2: A representation of the staffroom sample population

<table>
<thead>
<tr>
<th>Population category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers</td>
<td>14</td>
<td>56</td>
</tr>
<tr>
<td>Subordinate staff</td>
<td>11</td>
<td>44</td>
</tr>
</tbody>
</table>

Table 3: Sample population for the interviews

<table>
<thead>
<tr>
<th>Population category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Students</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td>Parents/guests</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Subordinate staff</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Receptionist</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>
**Table four 4:** Sample population for the questionnaires

<table>
<thead>
<tr>
<th>Sample Population category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers</td>
<td>9</td>
<td>22.5</td>
</tr>
<tr>
<td>Students</td>
<td>13</td>
<td>32.5</td>
</tr>
<tr>
<td>Parents/guests</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>Subordinate staff</td>
<td>6</td>
<td>15</td>
</tr>
</tbody>
</table>

### 3.4 Modes of data collection

The researcher used four research instruments to collect data in relation to investigating ways in which universal design principles can be applied for this study. The research instruments included: non participant observation method alongside photography, semi structured interviews, questionnaire and archival Research.

#### 3.4.1 Non participant observation

Non participant observation requires the researcher to observe without interfering with the on-going activities. Using observational tools including field notes and photography within the schools reception and staffroom interior spaces, the observation process allowed critical examination of the spaces to identify any application of universal design principle this method allowed the researcher to establish the variety of people who visit the reception i.e. the age, gender and ability. For the staffroom the researcher observed that only teachers and subordinate staff had access to it. The researcher also took photographs and drew sketches of the two spaces and landscape during the observation process.

#### 3.4.2 Semi-structured Interviews

Among other methods, the author used semi-structured interviews as the main method of data collection as with qualitative research the data collected are usually words. Semi-structured interviews allow for a fixed set of questions but with no fixed responses and allows participants to expand on points made in the conversation. Semi-
structured interviews allow for flexibility that the researcher had not anticipated when preparing the interviews the researcher was able to get in depth information i.e. personal views on the general design of the reception and staffroom interior designs from the participants

3.4.3 Archival Research

Archival research was used to review relevant literature for the study. This was sourced from publications such as books, reports, articles, journals, academic papers, web sources as well as other literature that contained relevant material and information to this study.

3.4.4 Questionnaires

The questionnaires used played a vital role in the project. Some people preferred to answer at their own time instead of verbal discussion and due to other commitments. Four sets of questionnaire were administered; one to reception, another to guest/parents which dealt with questions regarding only the reception space, next to students which dealt question addressing the reception space and landscape and the last one to teachers which dealt with questions addressing the reception, staffroom, and landscape.

3.5 Data Analysis methods

The Processing and analyzing of data involved a number of closely related operations which were performed with the purpose of summarizing the collected data and organizing them in a manner they answer the research questions (objectives). The data processing operation included, editing which basically involved the researcher examining the collected raw data to detect errors and omit and correct when possible. Secondly the researcher did classification or categorization of the data into groups or classes on the basis of common characteristics i.e. Questionnaires feedback and interview answers. Then the researcher did a comparative analysis where by the data was assessed to identify any relationship or patterns, so that the data and their interpretations are scrutinized for underlying themes and other patterns that characterize the case more broadly than a single piece of information can reveal.
3.6 Data presentation methods

Most of the data is presented in the form of photographs, tables and charts.

3.6.1 Photography: Photographs are used to present complement by descriptions to explain the circumstances and their relevance to the research. There are several aspects of universal design in interior spaces that cannot be explained appropriately without photographs that make the explanation more explicit.

3.6.2 Tables: Data that will be collected from structured interviews will be presented in tables and charts form. This is because a more structure question guide will be employed to collect information from relevant respondents. The tabulated data will be complemented with narrations to explain their relevance to the research.
CHAPTER FOUR

4.0 Site Analysis, Presentation and Interpretation Findings

4.1 Introduction
From the research, Rusinga School’s reception and staffroom designs do not adequately exhibit universal design principles through its interiors, furniture exhibition and display and landscaping. This chapter will focus on shedding some light on the problems faced at the site through pictorial and theoretical analysis.

4.2 Analysis pictorial and Theoretical

4.2.1 Site location
Rusinga School is located along Gitanga Road next to kawangware. One can access the School from three main areas: Kawangware, Gitanga road and route 57. It’s a Christian international co-educational day school following British curriculum (BNC). It incorporates Kindergarten, Primary School and a Secondary school including A –level. The School was established in 1975. The name comes from the Rusinga inland in Nyanza.

4.2.2 Site plans

Figure 10: Reception plan

Source: Author
4.2.3 Reception entrance

The design of an entrance has significant influence on both the appearance and functionality of the building. Entrances signify the point of access to a building; provide a focal point for staff, residents and visitors; and serve to welcome people into the building. A clearly visible entrance is likely to create a positive impression for all building users and make them feel welcome. An entrance should be easy to locate and clearly distinguished from the rest of the building.

Figure 11

**Source:** Author, **DATE TAKEN:** 15/November /2012
Rusinga school reception entrance is distinguished from the rest of the building by the architectural feature; the canopy for easy identification. However the is poor maintenance had lead to the wall paint is chipping off and the flowers are stepped on by students.

**Figure 12**

![Wall paint chipping off](image)

**SOURCE:** Author, **DATE TAKEN:** 15/November /2012

**Figure 13**

![Poor planting design due to constant stepping from students](image)

**SOURCE:** Author, **DATE TAKEN:** 15/November /2012

**Figure 14**

![Small signage; can’t be seen from afar especially for short sighted people.](image)

**SOURCE:** Author, **DATE TAKEN:** 15/November /2012
4.2.4 Reception Interior design

The reception area lacks enough circulation space more so for persons with wheelchairs whom require 1500mm diameter of space to turn around comfortably. The wall colour and the ceramic tile floor do not complement the seats. Due to the cold atmosphere of the room the wall paint is falling off. They have acoustic ceiling with cased florescent lighting. For the windows they are using vertical blinders which make a lot of noise when the wind is blowing. The telephone power supply fixtures are bear which makes the space look bad.

Figure 15

![Small circulation space](image1)

**SOURCE:** Author, **DATE TAKEN:** 15/November/2012

Figure 16

![Chipped wall paint](image2)

**SOURCE:** Author, **DATE TAKEN:** 15/November/2012

Figure 17

![Acoustic ceiling with florescent lighting](image3)

**SOURCE:** Author, **DATE TAKEN:** 15/November/2012
4.2.5 Reception furniture design

The reception area contains furniture, such as desk, seating i.e. sofas and display unit. The sofas are large in size hence taking a lot of space and their layout or arrangement is not proper. The reception desk is large in size (1200 height, 1800 width and 2000 mm length) thus taking much space; it’s also old and dull i.e. not complementing the space. The desk design doesn’t allow easy accessibility to the receptionist by people on wheelchairs.
Unsightly wooden reception desk

SOURCE: Author, DATE TAKEN: 15/November/2012

Old fashioned receptions chair. Desk storage cabinets

SOURCE: Author, DATE TAKEN: 15/November/2012

Sofas made from Morocco material

SOURCE: Author, DATE TAKEN: 15/November/2012

Old Wooden table with school old school magazines

SOURCE: Author, DATE TAKEN: 15/November/2012
4.2.6 Reception exhibition and display

The reception exhibits items such as student’s paintings, student pictures, trophies and sculpture, however the display design is terrible it doesn’t compliment the beautiful art pieces. Due to the poor furniture layout, the trophies display unit has a reflection thus people are able to view trophies properly. The modes of display used include wall hanging canvas paintings, glass and wooden frames for pictures and wall cabinet for trophies.

**Figure 25**

Soap stone woman sculpture dressed in Kenyan kanga

**Source:** Author, **Date Taken:** 15/November /2012

**Figure 26**

Wall hanging canvasses student’s paintings

**Source:** Author, **Date Taken:** 15/November /2012

**Figure 27:** TV display

**Source:** Author, **Date Taken:** 15/November /2012
4.2.7 Reception landscaping

There is little indoor landscaping for the reception, there is only a barque of roses and a fish tank.

4.2.8 Staffroom interiors

The staffroom is dived into three sections: working area, lounge area and washrooms for both gents and ladies. The wood parquet floor in the staffroom area both lounge and work areas is slippery and expensive to maintain, while the washrooms have on the wall and the floor tiles which tend to get very cold in cold seasons. The ceiling is flat concrete with fluorescent lighting which has been used in the work area and washroom. The cream white wall colour does not stimulate any exciting or relaxing mode in the users. The washrooms have little space for circulation neither grab bars for support thus a person with a wheelchair or crutches will not be able to access them.
The toilets are three for gents and three for ladies with dimensions of 8100mm by 1720mm. The doors and the corridor are too narrow for two person pass by at same time. The toilet doors have plinths hence making it difficult for a person on wheelchair to access it. The mirrors in the washroom are directly placed in front of the toilets, so there is a reflection of someone in the mirror when entering or coming out the toilet.

**Figure 30**

Flat concrete ceiling with florescent lighting

**SOURCE:** Author, **DATE TAKEN:** 15/November/2012

**Figure 31**

Wooden Parquet floor

**SOURCE:** Author, **DATE TAKEN:** 15/November/2012

**Figure 32**

Stars on the staffroom back door

**SOURCE:** Author, **DATE TAKEN:** 15/November/2012
Narrow washroom corridor - 850mm from ground

**SOURCE:** Author, **DATE TAKEN:** 15/November /2012

60mm high Plinth

**SOURCE:** Author, **DATE TAKEN:** 15/November /2012

Mirrors reflecting to inside of the toilets

**SOURCE:** Author, **DATE TAKEN:** 15/November /2012

Narrow toilet space - 8100mm wide with no grab bars

**SOURCE:** Author, **DATE TAKEN:** 15/November /2012
4.2.9 Staffroom furniture design

The staffroom consist of both moveable and fixed furniture, the moveable furniture includes chair, tables, and sofas. The fixed furniture comprises of working and computer tables, wall shelves and teachers lockers. The furniture layout in the lounge is not well done some, furniture have been put too close to the entrance doors thus causing obstruction. Similarly due to poor furniture layout some of the power outlets-sockets are not easily accessible. Neither the seats nor tables are uniform in design: there are three different designs. The main problem in the working area is storage, books are just clustered everywhere with no form of organisation. The chairs in the working are not ergonomically fit.

Figure 36

Poor storage units, and misuse of storage units through storage of personal belongs-shoes, bag and food

SOURCE: Author, DATE TAKEN: 15/November /2012

Figure 37: working chair

Stained floor

SOURCE: Author, DATE TAKEN: 15/November /2012
4.2.10 Staffroom Exhibition and display

The staffroom lacks aesthetically pleasing displays thus making the area boring. There are only boards which exhibits notice to teachers- timetables, teacher register, exams/results and library news. Different coloured manila papers and paper cut patterns have used for the background for the boards. The exhibition board are 2000mm by1100mm in size.
2.4.11 Landscaping architecture

The site experiences a moderate climate since it’s located in Nairobi. Nairobi has a subtropical highland climate. The altitude makes for some cool evenings, especially in the June/July season, when the temperature can drop to 10 °C (50 °F). The sunniest and warmest part of the year is from December to March, when temperatures average the mid-twenties during the day. The mean maximum temperature for this period is 24 °C (75 °F). The site experiences rain during the two rainy seasons, but rainfall can be moderate. The cloudiest part of the year is just after the first rainy season, when, until
September, conditions are usually overcast with drizzle. Even though the site is situated at centre of buildings which include the staffroom, classroom and offices, is well covered by the sun. The area contains loams soil with moderate water retention suitable for sustain most tropical plants. It’s small in size hence containing few plants which are mainly used as fence to the landscape. The site follows a planting design with landscaping elements such as line, shape and chromatic color and landscaping principles such as repetition and harmony. The site does not have varied species of plants which have little function in terms of aesthetics or providing shade.

**Figure 44**

![Image 1](image1)

The only tree at centre of the garden  
**SOURCE:** Author, **DATE TAKEN:** 15/November /2012

**Figure 45**

![Image 2](image2)

Poor grass growth  
**SOURCE:** Author, **DATE TAKEN:** 15/November /2012

**Figure 46**

![Image 3](image3)

Planting design using shapes  
**SOURCE:** Author, **DATE TAKEN:** 15/November /2012
4.3 Analysis of data findings

4.3.1 Questionnaire and interview findings analysis

Some of the researcher’s objectives included investigate different ways in which universal design can be applied in design of Rusinga school reception and staffroom and to improve the design quality of the reception and staff room by creating more ambiences and making it more accessible to all in the context of using universal design principles.

A population of 14 persons was randomly selected to represent the quests / parents that visit the reception and questionnaires were issued to 12 persons while 2 were interviewed. 13 students were issued the questionnaire while 7 were interviewed, 1 receptionist was interviewed, 9 teachers were issued the questionnaire while 5 were interviewed lastly 6 subordinate staff were issued the questionnaire while 5 were interviewed. The researcher hoped to know if the school reception and staffroom were universal designed in terms of entrances, doors, lighting, floor finishes, washrooms and furniture- including reception desk, sofa, chair and tables as well as doors. One of the interview questions addressed to receptionist included the types of people who visited the reception. From the responds 24% of parents/guests with baby strollers, 5% of students/guest on crutches, 15% of elderly and person with wheel chairs visited the reception per week.

A total of 40 persons participated in the reception Questionnaire. From the questionnaire given sample 60% respondents said that the door size and design caused traffic around the door since only one person can pass at a time, 50% said the door mat does not allow easy accessibility in and the reception for person with wheel chairs and baby strollers. 100% said the space allocated to reception is small as it can only accommodate six persons and school occasional has many people visiting. From the interviews, 99% said the reception desk does not allow easy accessibility to receptionist for person on wheelchairs, children and small students. Respondents on a scale from good- average - bad graded the reception in terms of future layout, floor covering, and exhibition & display and color scheme. For furniture layout 50% average, 10% said good and 40 said bad. For the floor covering 60% said well, 25% said average and 15% said badly. For the exhibition & display design 30%good,
60% average and 10% said badly. For the color scheme 70 said averages, 15% said good and 15% said bad.

**Staffroom area**

The staffroom area is divided into the work area, lounge area and washrooms. A total of 25 people including teachers and subordinates participated in the questionnaire. For the work area 80% of the respondents said that the space allocation was small compared to the number of teachers who use the space. 60% said the chairs are not flexible in use. i.e., the design does not accommodate a wide range of individual preferences and abilities. 90% graded the storage (wall shelves) design as bad, while 10% said average. In the lounge area, the respondents graded the furniture layout and sofa design as 60% said bad, 25 average and 15% good. For the exhibition & display 45% said bad, 35 average and 20% said good. For the floor covering 55% said well, 25% said average and 20% said badly. For the color scheme 65 said averages, 20% said good and 15% said bad. For washroom 80% said the space allocation is small hence lack of enough maneuvering space, 90% said the door and corridor sizes were small. 60% said the lighting availability was bad, 45% said the toilet sit were low. 65% said the toilet door locks were not efficiently and comfortably to use with a minimum of fatigue. In an interview with female teachers, they expressed that the washrooms lacked storage facilities where they can place the personal belongings such as make up kit.

**Landscaping**

The sample population for the landscape that the questionnaire was administered to included teachers, students, and subordinate staff. A total of 45 people participated. The respondents graded the landscape planting design, and section of plants. 55% said the planting design and plant selection is average. 25% said good and 20% said bad.

**4.3.2 Observation findings and analysis**

The researcher was able observe and note various problems in the two spaces, especially in washrooms where she was able to identify a plinth on the doors to the toilets, and the toilets were a little short and the benches available were very dusty. The researcher also observed that few teachers spent their time in the lounge area.
4.4 Data presentation and interpretation

Table 5: A representation of the types of people who use the reception

<table>
<thead>
<tr>
<th>Types of people</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents/guest with baby stroller</td>
<td>24</td>
</tr>
<tr>
<td>People with wheelchair/ Elderly people</td>
<td>15</td>
</tr>
<tr>
<td>People with crutches</td>
<td>5</td>
</tr>
<tr>
<td>Other people</td>
<td>56</td>
</tr>
</tbody>
</table>

Chart 1: A representation of No of participants who think reception desk design/size inhibits accessibility to receptionist

Chart 2: A representation of opinions on reception space allocation

Chart 3: A representation of opinions on the condition/design of wall shelves.
Chart 4: A representation of opinions on landscape planting and plant selection

![Chart 4: Planting design and plant section](chart4)

Chart 5: A representation of opinion regarding the working area space allocation

![Chart 5: Working area space allocation](chart5)

Chart 6: A representation of opinions regarding washroom door locks efficiency and comfortability

![Chart 6: Door lock efficiency & comfortability](chart6)
Table 6: A representation of participants’ opinion for the reception area

<table>
<thead>
<tr>
<th>CONDITION/DESIGN</th>
<th>Good</th>
<th>Average</th>
<th>Bad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furniture layout</td>
<td>10</td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>Exhibition &amp; display</td>
<td>30</td>
<td>60</td>
<td>10</td>
</tr>
<tr>
<td>Floor covering</td>
<td>60</td>
<td>25</td>
<td>15</td>
</tr>
<tr>
<td>Color scheme</td>
<td>15</td>
<td>70</td>
<td>15</td>
</tr>
</tbody>
</table>

Table 7: A representation of participants’ opinion for the work and lounge area

<table>
<thead>
<tr>
<th>CONDITION/DESIGN</th>
<th>Good</th>
<th>Average</th>
<th>Bad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furniture layout</td>
<td>15</td>
<td>25</td>
<td>60</td>
</tr>
<tr>
<td>Exhibition &amp; display</td>
<td>20</td>
<td>35</td>
<td>60</td>
</tr>
<tr>
<td>Floor covering</td>
<td>55</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>Color scheme</td>
<td>20</td>
<td>65</td>
<td>15</td>
</tr>
</tbody>
</table>

Photography presentation

Figure 47: Washroom door lock

Figure 48: Narrow Gents toilets
4.5 Conclusion

From the findings the researcher discovered that certain aspects of the school buildings and its interiors hinder flexible interaction of people with the physical or built environments. This aspects are barriers which are mostly put in place by architects who when designing a building do not anticipate the needs of certain people, like those with wheelchairs or crutches, the elderly and the children but rather assume that it’s the able bodied individuals who are in need to use the buildings. Interiors designers also contribute to this problem when they design furniture that are not flexible in use or when they select flooring materials are that not tolerance for error.
CHAPTER FIVE

5.0 Summary and Recommendations

5.1 Introduction

The need for improving the image of the Rusinga School’s reception and staffroom has been expressed by the schools Administrations, staff, students and parents. They expect a design that meets the current requirements and future requirements. This chapter sets out to conclude and make recommendations for the study site through the data collect through interviews, questionnaires and observations.

5.2 Summary

This study attempted to provide factual text and shed some light on problems faced at study site. With the guidance of the study objectives document in chapter on, this study was aimed at investigating different ways in which Universal Design principles in can be applied in the interiors, furniture, landscape and exhibitions & display of study side, in addition to improve the design quality of the two spaces and the landscape through universal design.

Universal design has been defined as the design of products and environment to be usable by all people to the greatest extent possible without the need for adaption or specialized design. To integrate this philosophy into products and environments designer follow seven principles which include: Equitable Use, Flexibility in Use, Simple and Intuitive Use, Perceptible Information, Tolerance for Error, Low Physical Effort, Size and Space for Approach and Use. The study site exhibited certain problems such as lack of enough circulation or manoeuvring space, lack of flexibility in use of furniture, flooring material inhibiting easy movement and door size and design inhibiting accessibility. Other problems aired from respondents through questionnaire and interviews; include dull color scheme, poor furniture choice and layout, bad storage facilities basically lack of ambience in the interiors of the two spaces. In landscaping two main problem aired include lack of plant varieties and uninteresting planting design.
2.3 Conclusion

Each of us is unique in age, size, abilities, talents, and preferences. Any human characteristic that can be measured spans a broad range in any population. An understanding of human diversity is critical to designing effectively. Successful application of universal design principles requires an understanding of how abilities vary with age, disability, the environment, or the circumstances. Designers need to take up this responsibility in creating or design environments or product that can are useable to all people more particularly public environments. Assumusion should not be taken that only able persons use public spaces or products.

5.4 Recommendations

The recommendations provided in this chapter are the researchers views based on her knowledge and past literature on designing universal and sustainable environments. In addition the researcher bases the general design recommendations on African contemporary design. African contemporary design was selected as the theme in order to address the lack of ambience in the two spaces. The recommendations are specified to the four areas.

5.4.1 Interior design

Entrances/ signage

The entrance should be easy to be identified by every individual; even though the school reception entrance is differentiated the signage on the door should be large enough for all to see. Lettering should be 9mm think and 50mm high bold. A glass double door (1800) with markings should be introduced as to reduce people traffic on the entrance. A ½ inch maximum rise at entrance thresholds and minimum 1500mm by 1500mm clear space inside and outside entry door is required. For the interior reception door sliding pocket door should extent 2 inches minimum outside doorjamb and be equipped with open –loop handles for easy gripping.
**Spatial movement**

Enough circulation space around furniture should be provided to enable easy movement by all users including people with wheeled mobility devices, in the reception, staffroom work area and lounge area. This to be achieved the reception area should be expanded since there is space outside to accommodate this expansion. In the washrooms adequate manoeuvring space should be provide 1500mm diameter turning space, clear space (900mm) in front and to one side of the toilet and the toilet should be cantered 450mm from any side wall. This to be achieved the toilets should be minimized to two for gents and two for ladies. Washroom corridor should be wide enough to enable people to move in both directions and pass each with easy.

**Flooring**

All floors should be Low-maintenance, durable and slip-resistant. The floor should be resilient to allow minimum injury or breakage from drops or falls. The flooring should be a fairly smooth or regular surface for ease of use by persons with mobility or balance issues. I strongly recommend bamboo flooring for the reception, working area and lounge area. Bamboo is a rapidly renewable material making it sustainable. It has been utilized recently in the construction and renovation of building following "green" construction practices. For washrooms I recommend to retain the current ceramic tiles is a good choice. Bamboo flooring is also commonly used in African contemporary interior design.

**Aesthetics**

As document in chapter two, the design theme African contemporary will be portrayed through the interior decor. The decor should always tend to drift to the natural as African contemporary interior design is inspired by nature. The African contemporary colour palette should be used. Bold colours can be for accent and focal walls. Artifacts and paintings that complement the theme should be used.
Furniture Design

Furniture in common areas must be usable by all people regardless of ability. The number of seats should be increased in the reception at the same time have variety so as to accommodate the large numbers of guests and their preference. The desk should be usable from both sides at a height of 950mm to 1100mm for people standing and 760mm for people sitting down or using a wheelchair. In the staffroom working area storage shelves should be placed low enough to be reachable by an employee. The design of the storage shelf should be able to accommodate different size of materials that are stored. The furniture should also portray elements of African contemporary this can be achieved through either the material used or the design itself. The position of furniture in the in the two spaces must allow an individual to navigate the wheelchair easily and safely. All common access paths should not have furniture protruding into the space and making the routes narrower. Any passage must be at least 36 inches wide continuously, though it is permissible for passages to be as narrow as 31 inches at individual points.

Exhibition and display

In determining the optimum dimensions for display units, it is important to consider the boby measurements of the intended users. The display design of items should be improved, the student’s canvas paintings should be framed to look more presentable and the display unit for trophies should be upgraded design wise to include elements of African contemporary. Display lighting should be introduced. The student’s items selected for exhibition should complement the design theme African Contemporary.

Landscaping

A well designed landscape is very important in the school’s setting. Plants are meant for relaxation purposes and also to create interest in the atmosphere. Formal asymmetrical planting design should be introduced. The plant selection should include colorful African indigenous flowers such African lily, African moon and plant such as Somalia hemp and Kikuyu glass. Water features such as concrete water pots to be introduced. Lighting of the landscape should be introduced including both down lighters and up lighters.
5.5 Suggested areas of further research

In depth research on the application of universal design in public spaces more in both public and private schools.
References


Appendix

QUESTIONNAIRE

PARENTS/GUESTS

The researcher is a final year design student at the school of arts and design, University of Nairobi, seeking to study “The application of universal design principles in the interior design of Rusinga School”. Kindly assist by filling the questionnaire. This report will strictly be scholarly purposed only.

Universal design is an approach to creating environments and products that are usable by all people to the greatest extent possible, without the need for adaptation or specialized design.

SECTION A

1. Gender

    ❖ Male [ ] female [ ]

2. Position

    ❖ Parent/guest [ ]

3. (i) Is the space allocation for the reception enough?

    ❖ Yes [ ] No [ ]

    (ii) Why?

        ............................................................................................................................

4. Grade the furniture layout (arrangement)

    ❖ Good [ ] Average [ ] Bad [ ]

5. Are the seats design useful and marketable to people with diverse abilities?

    ❖ Yes [ ] No [ ]
6. Does the reception desk design allow easy accessibility to the receptionist for any seated or standing person?

- Yes [ ]  No [ ]

7. Does the door design and size allow easy movement in and out the reception?

- Yes [ ]  No [ ]

8. Does the floor finish minimize hazards and the adverse consequences of accidental or unintended actions?

- Yes [ ]  No [ ]

9. Grade the general design of the reception

- Good [ ]  Average [ ]  Bad [ ]

10. How can you define the color scheme of the reception?

- Dull [ ]  Calm [ ]  Bright [ ]

11. Is the light available in the reception area enough?

- Yes [ ]  No [ ]

12. Grade the exhibition and display design in the reception area.

- Good [ ]  Average [ ]  Bad [ ]
QUESTIONNAIRE

STUDENTS

The researcher is a final year design student at the school of arts and design, University of Nairobi, seeking to study “The application of universal design principles in the interior design of Rusinga School”. Kindly assist by filling the questionnaire. This report will strictly be scholarly purposed only.

Universal design is an approach to creating environments and products that are usable by all people to the greatest extent possible, without the need for adaptation or specialized design.

1. Gender
   - Male [ ]  Female [ ]

2. Position
   - Student [ ]
   - Grade
     (Yr 7 – Yr 11) [ ]  (Yr 12 - yr 13 [ ]

3. (i) Is the space allocation for the reception enough?
   - Yes [ ]  No [ ]
   (ii) Why?...........................................................................................................................................................................

4. Grade the furniture layout (arrangement)
   - Good [ ]  Average [ ]  Bad [ ]

5. Are the seats design useful and marketable to people with diverse abilities?
   - Yes [ ]  No [ ]
6. Does the reception desk design allow easy accessibility to the receptionist for any seated person?
   - Yes [ ]  No [ ]

7. Does the door design and size allow easy movement in and out the reception?
   - Yes [ ]  No [ ]

8. Does the floor finish minimize hazards and the adverse consequences of accidental or unintended actions?
   - Yes [ ]  No [ ]

9. Grade the general design of the reception
   - Good [ ]  Average [ ]  Bad [ ]

10. How can you define the color scheme of the reception?
    - Dull [ ]  Calm [ ]  Bright [ ]

11. Is the light available in the reception area enough?
    - Yes [ ]  No [ ]

12. Grade the exhibition and display design in the reception area.
    - Good [ ]  Average [ ]  Bad [ ]

SECTION B

LANDSCAPING (garden outside staffroom)

1. Grade the generally design of the landscape
    - Good [ ]  Average [ ]  Bad [ ]

2. Define the plant selection in the landscape
    - Dull [ ]  Bright [ ]  lively [ ]

Thank you!
QUESTIONNAIRE

TEACHERS AND SUBORDINATE STAFF

SECTION A

The researcher is a final year design student at the school of arts and design, University of Nairobi, seeking to study “The application of universal design principles in the interior design of Rusinga School”. Kindly assist by filling the questionnaire. This report will strictly be scholarly purposed only.

Universal design is an approach to creating environments and products that are usable by all people to the greatest extent possible, without the need for adaptation or specialized design.

1. Gender
   - Male [ ]    female [ ]

2. Position
   - Teacher [ ]
   - subordinate staff [ ]

3. (i) Is the space allocation for the reception enough?
   - Yes [ ]    No [ ]

   (ii) Why?...........................................................................................................................................................
   ...........................................................................................................................................................
   .... 

4. Grade the furniture layout (arrangement)
   - Good [ ]    Average [ ]    Bad [ ]

5. Are the seats design useful and marketable to people with diverse abilities?
   - Yes [ ]    No [ ]

6. Does the reception desk design allow easy accessibility to the receptionist for any seated person?
   - Yes [ ]    No [ ]

7. Does the door design and size allow easy movement in and out the reception?
   - Yes [ ]    No [ ]
8. Does the floor finish minimize hazards and the adverse consequences of accidental or unintended actions?

- Yes [ ]
- No [ ]

9. Grade the general design of the reception

- Good [ ]
- Average [ ]
- Bad [ ]

10. How can you define the color scheme of the reception?

- Dull [ ]
- Calm [ ]
- Bright [ ]

11. Is the light available in the reception area enough?

- Yes [ ]
- No [ ]

12. Grade the exhibition and display design in the reception area.

- Good [ ]
- Average [ ]
- Bad [ ]

SECTION B

STAFFROOM

1. Is the space allocated to the work area, lounge area and washrooms enough?

- Yes [ ]
- No [ ]

(ii) Why? ...........................................................................................................................

........................................................................................................................................
........................................................................................................................................

2. Grade the furniture layout (arrangement) in the work area and lounge area.

- Good [ ]
- Average [ ]
- Bad [ ]

3. Are the seats design useful and marketable to people with diverse abilities?

- Yes [ ]
- No [ ]

4. Do the door sizes allow easy movement?

- Yes [ ]
- No [ ]

5. Do the doors require a lot of physical effort to open them?

- Yes [ ]
- No [ ]
6. Grade the general design of the staffroom
   - Good [ ]  Average [ ]  Bad [ ]

7. How can you define the color scheme of the staffroom?
   - Dull [ ]  Calm [ ]  Bright [ ]

8. Is the lighting design suitable for working?
   - Yes [ ]  No [ ]

9. Grade the exhibition and display design in the staffroom area.
   - Good [ ]  Average [ ]  Bad [ ]

10. Is the corridor space to the washrooms enough?
    - Yes [ ]  No [ ]

SECTION C

LANDSCAPING

1. Grade the generally design of the landscape
   - Good [ ]  Average [ ]  Bad [ ]

2. Define the plant selection in the landscape
   - Dull [ ]  Bright [ ]  lively [ ]

   Thank you!
Interview guide

1. What types of people do often use the reception/staffroom?
   ........................................................................................................................................
   ........................................................................................................................................

2. In your own word, what is your first impression of the reception/staffroom in terms of design?
   ........................................................................................................................................
   ........................................................................................................................................
   ........................................................................................................................................

3. In what ways can the interior design of the reception/staffroom be improved?
   ........................................................................................................................................
   ........................................................................................................................................
   ........................................................................................................................................

4. Do you think the spaces allocated for the reception/staffroom working area is enough?
   ........................................................................................................................................
   ........................................................................................................................................
   ........................................................................................................................................

5. In your own words, with the current design of the reception/staffroom is there any application of universal design principles? If yes which areas?
   ........................................................................................................................................
   ........................................................................................................................................
   ........................................................................................................................................