



UNIVERSITY OF NAIROBI
COLLEGE OF ARCHITECTURE AND ENGINEERING
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BDS 413: PROJECT PAPER.
(Interior Design Specialization)

**BLENDING AFRICA SAFARI WITH BIOMIMICRY IN CREATING A SUITABLE
ENVIRONMENT FOR A CARE FACILITY.**

A CASE STUDY OF THE YOUNG LIFE AFRICA CHILDREN'S HOME.

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**PROJECT PAPER SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIRED
BACHELOR OF ART IN DESIGN DEGREE SUBMITTED TO THE SCHOOL OF THE
ARTS AND DESIGN, UNIVERSITY OF NAIROBI.**

14TH April, 2020.

DECLARATION

I declare that this is my original work and has not been presented in the past for the fulfillment of a degree course in any other university to the best of my knowledge.

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DEDICATION

To the Lord Almighty for enabling me reach this far in life.

I dedicate this paper to my parents, Mr. & Mrs. Kibe and my brother, Martin Kibe; you are the reason I have reached where I am. Thanks for the continued prayers and support.

ACKNOWLEDGEMENT.

To my loving family and friends, thank you so much for the constant encouragement throughout the four years in campus. I could have not done it without you.

To my lecturers, thank you for constantly guiding and leading me in the right direction and also not forgetting the entire class of 2020 who we worked together in order to make this paper be completed in time.

ABSTRACT

This research paper contains information done by the researcher. The research takes a specific site study of the Young Life Africa Children's home in Ruiru. The researcher tends to apply Africa Safari décor together with biomimicry to create vibrant and inspiring spaces and an appealing and suitable environment for the children in the children's home. This will not only make the orphans feel loved and special but it will stimulate their stunted development and surely have a positive impact on these children. Safari style is a Swahili word meaning adventure will be a major source of inspiration that will aid in creating a suitable and sustainable environment that will cater for the needs of the children in the children's home. The use of sustainable material is also put into consideration greatly to ensure conservation of the environment. Biomimicry which is simply being nature inspired design is not very different from Africa Safari since both of them mostly deal with nature and naturally occurring materials and color scheme as well. Society is becoming more increasingly aware of the importance of environmentally responsible building. Today people are turning to green design solutions as a way of living to preserve the earth. Designers have a mandate to also come up with sustainable design solutions to solve the design problems that arise. Interior designers have a tremendous impact on the sustainability of an environment because they are the ones deciding which materials and products will be used and how economically people will be able to interact with their surrounding spaces.

The research will be segmented into five main chapters. Chapter one covers the introduction to the problem, its background and the problem statement. The objectives of the study and the research questions are clearly outlined. The researcher goes ahead and explains why the study is significant and justifies it. Chapter two describes the existing literature review that assists the researcher to expand the knowledge on the matter and also previsualize possible outcomes of the study. Chapter three discusses the research design, population and sample and various methods of data collection and data presentation, while stating the reason why. Chapter four illustrates the findings according to the researcher. Chapter five covers the summary, conclusions and the recommendations.

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CHAPER ONE.

1.0 INTRODUCTION OF THE STUDY.

1.1 INTRODUCTION.

All over the world, orphans in the past and present, have lived in homes called orphanages or children's home. Whereas some of these facilities tend to cater for many more needs than just the provision of accommodation, others merely provide safe accommodation for these children. In this chapter, the researcher states the background of the problem leading to the research. The researcher also gives the statement of the problem, the objectives and research questions that will guide to a successful research. This section also includes significance of conducting this research and the limitations of the study. This research mainly centers the Young Life Africa Children's Home.

1.2 BACKGROUND OF THE PROBLEM.

According to Standard media, 2015, the number of Charitable Children Institution (Children Homes) in Kenya has been on a steady rise in the recent years. A 2012 Save the Children report estimated the number of registered children homes in Kenya to be 701 holding a total of 43,286 children. Furthermore, the department of children services had estimated that number of children in these institutions had risen from 10,568 children in 2004 to 40,506 children in 2010. This coupled with the fact that of most these entities that are mushrooming left, right and center are not registered or regulated as per the provisions of the Children Act of 200, means that the number of children in these institutions are much higher than these stated figures. Reports by UNICEF and Save the Children indicate that majority of these children in these institutions have at least one parent and or existing relatives. Most caregivers relinquish their care responsibilities because of poverty (Ucembe, 2016, para. 4).

This research has been generated in order to understand a child's development and their needs of what a home is to them. "This settlement as home, in the full sense of the words, refers to a place for which we feel responsible and engaged, in terms of building, nurturing and preservation, through deep acquaintance with the place's natural and human components and through an understanding of ourselves as part of a continuity of a generation" (Heidegger 1977, as cited in, Avriel- Avni, Zion, and Spektor-Levy 2010, p. 138). A child being placed in a situation where they need to live in an orphanage is not the ideal location for self-development. Studies as understanding a child's perception of what a home is, impacts that crowding has on a child psychologically,

environmental influence, psychological impact that architectural interior feature has, and the influence that those individuals around have on them.

1.3 PROBLEM STATEMENT.

The initial intentions of these orphanages are often well meaning but the care provided in them is grossly inadequate and culturally inappropriate. Furthermore, due to the increased number of children (both orphaned and vulnerable children) in the children's home, most of the orphanages have insufficient accommodation facilities, leaving the few available rooms overcrowded. This is also the case for other supporting spaces like toilets, dining areas and recreational facilities/ areas, as it is in the case in Young Life Africa Children's home.

1.4 OBJECTIVES.

1.4.1 MAIN OBJECTIVE.

To establish the relevance of blending Africa Safari and biomimicry in enhancing the sustainability of an interior space.

1.4.2 SPECIFIC OBJECTIVES.

- i. To determine how to blend Africa Safari and biomimicry in enhancing the sustainability of an interior space.
- ii. To determine the African Style themes that can be applied to create a stunning interior space.
- iii. To investigate the current state of the environment of the Young Life Africa Children's home.
- iv. To propose design solutions for blending Africa safari and biomimicry while using recycled products in creating an appealing and sustainable interiors of Young Life Africa Children's home.

1.5 RESEARCH QUESTIONS.

1.5.1 MAIN RESEARCH QUESTION.

What is the relevance of blending Africa Safari and biomimicry in enhancing the sustainability of an interior space?

1.5.2 SPECIFIC RESEARCH QUESTIONS.

- i. How can Africa Safari and biomimicry be blended to create a sustainable interior space?
- ii. Which African style themes can be applied in designing the Children's home?
- iii. What is the current state of the environment of Youth Life Africa Children's home?
- iv. What are the design solutions for blending Africa Safari and biomimicry while using recycled products in creating an appealing and sustainable interior?

1.6 SIGNIFICANCE OF THE STUDY.

Children living in crowded homes are found to have greater behavioral issues (Evans, 2001). The beginning years of a child's life are extremely important, as it is the foundation that will mold a child's personality and many factors in confidence. An upbringing could be a difficult time but it is further difficult without the structure of a family. According to the study conducted by Noa Avriel- Avri, Michal Zion and Ornit Spektor- Levy, children need to be able to feel an attachment to their home and the town where they live in (p. 139). This study will provide a view from a psychological stand point on how children will can feel comfortable in an environment and how they are able to gain emotional stability. These views are from different perspectives of what are the needs of children from a psychological point. As stated by Avriel- Avri, Michal Zion and Ornit Spektor- Levy, (2010) children need to be able to feel that they have control over a space in which they are able to personalize. It is important for the design community to be able to understand the needs of children in order to be able to provide them with a better lifestyle. Interior design may be able to improve the needs of an orphanage infrastructure and its occupiers by developing an understanding of children's needs.

1.7 LIMITATIONS OF THE STUDY.

The project is carried out in a short period thus not all areas are fully covered in terms of interior design application.

Financial constraints. The costs of visiting the site and creating the concepts are wholly reliant on the student's financial stability.

1.8 SCOPE OF THE STUDY.

1.8.1 GEOGRAPHICAL.

Young Life Africa Children's Home is located in Kenya, Kiambu County, Ruiru sub-county, about 1.5km off Thika superhighway behind Kenyatta University Ruiru Campus. It is approximately 35km from Nairobi. It is a home that rescues, rehabilitate, accommodate, educate and feed orphans and vulnerable children from the society. They target male children from five to eighteen years. The project was started in 2003 March 15th in Huruma slums with the sole objective of helping the disadvantaged children living in the slum of Mathare, kambi-moto, Huruma; Kariobangi from all forms of bondages, socially. Later, the home was moved to Ruiru. They have a low-cost irrigation system for the vegetable garden.

1.8.2 CONTENT.

Bio-mimicry will be used creating a suitable and sustainable interior space of the children's home, exhibition and display of the products, furniture and also in the landscape.

1.8.3 CONCEPT.

Bio-mimicry is not just imitating nature, it usually occurs in three main levels i.e. form, process and eco-system. It is first a close examination of the organism/ eco-system and then applying the design elements and principles of its form to come up with a product. For instance, imitating patterns of a particular organisms to come up with a product that has unity.

1.9 CONCLUSION.

This research will enable the researcher to blend African safari and biomimicry in improving the environment of the children's home by the aspiration to use African themes together with nature to come with a suitable and sustainable form of design that would greatly help Young Life Children's Home. This form of design should be able to give an African image with a touch of nature. It is noticeable that the use of African safari and biomimicry is very minimal and in some places none at all in almost all areas of from furniture, color to landscape and also the exhibition and display techniques. This evidence will enable the researcher to implement a wide range of choices.

1.10 ABBREVIATIONS.

UNICEF- United Nations International Children’s Emergency Fund.

1.11 DEFINITION OF TERMS.

i. Safari style

A Swahili word meaning “journey” or “travel”. It is symbolic of something exotic typically a sense of Africa and it evokes images of adventures and stylish indulgence.

ii. Sustainable design.

It is defined as the intention to reduce or completely eliminate negative environmental impacts through thoughtful designs.

iii. Biomimicry.

This is the imitation of the models, systems and elements of nature for the purpose of solving complex human problems.

CHAPTER TWO.

2.0 LITERATURE REVIEW.

2.1 OVERVIEW.

In this chapter, the researcher explains the relevance of Africa safari and biomimicry and how it has contributed to the growth of design. Recycling will also be discussed under sustainable design. The researcher will also go further and give exemplars of some of the works that have been done by other designers that will support the research being done. These exemplars aim at showing how African safari with biomimicry can enable a designer to come up with a suitable and appealing form of design. Africa Safari will be the main source of inspiration in the promotion and conservation of culture.

2.2 INTRODUCTION TO DESIGN PHILOSOPHY

2.2.1 ARICAN SAFARI.

All too often, people equate the term “safari theme” with obnoxiously loud neon animal prints and décor arrangements that exude about as much style and grace as a college dorm room. Others begin to channel Indiana Jones or a creepy huntsman’s cabin full of mounted animal heads. The mystery and romance of safaris first enthralled the public in the early 1900’s when former President Theodore Roosevelt went on an African expedition. In accordance to Landia Davies (budget safari blog), Africa’s Safari is the heart and soul of Africa.

Safari home décor is a great way to display a love for the African safari and wilderness. The Africa safari look is a combination of Africa’s rich colors of the land mixed with the accent colors and patterns of the animals that roam the land. Bold, tribal and majestic safari home décor makes a dominant stance in the decorating world (Bliss, 1998, p. 121). Some of the key components of safari design are natural, organic, earth-toned hues, such as khaki, pale gold, red ochre, a variety of browns, and earthy greens--all colors that can be found on the African plains. And, a safari-themed room wouldn't be complete without animal prints, such as cheetah, leopard, zebra, alligator or giraffe. Animal prints are never out of fashion for small rooms and spaces (Burns ,2001). Once you have the overall color scheme in place, and an idea of how much animal print you want to incorporate (this is one of those instances where less is more), then all you need to do is choose some tasteful and well-edited accessories to complete the look.

2.2.1.1 DECORATING WITH A SAFARI THEME.

One of the most important things to remember when decorating with a safari theme is to keep your style subtle and tasteful. A room packed with different animal prints, cheap African-style knick-knacks, baskets, and prints of lions, tigers, zebras and cheetah, will only make your room look like a Disneyland-style nightmare. Focus on a few key elements, keep your color palette to neutrals with a few bold pops of color, and you will create a sophisticated homage to safari design. Therefore, there are many design ideas that can be used in order to bring out a creative African safari décor. These includes animal prints, interior landscaping, color schemes, wall décor, fabrics and furniture.

2.2.1.2 ANIMAL PRINTS.

According to Bibi Jordan, there are many things that relate to wildlife that can be used to transform interiors from boring to exciting without changing the entire room. Animal prints are the most commonly used types of Africa safari décor and also greatly recognized in Africa and worldwide. These prints can turn any space into a breathtaking and elegant experience. From furniture and textiles to simple table accessories, the space could benefit from having vibrant animal prints. There are several ways in which these animal prints can be blended into a space and be able to perform their intended function. According to Dieter Rams in 10 principles of good design, he states that good design makes a product useful. When incorporating animal prints into a room keep them to a minimum to avoid making your room look overdone. Choose the items that are going to use a large print and for the other décor in the space use solid and contrasting colors in order to balance out the boldness of the animal prints (Capella and Juli, 1988).

Stick with a couple of different prints on a few key accessories such as pillows, a rug, or even one full wall covered in an animal-print wallpaper. Most people enjoy clean and simple color because it is relaxing. Prints like zebra can be used on something like rugs and the colors of the prints used on the walls, flooring and even curtains or other type of fabrics. Uniting patterns with colors and keeping the prints as small as possible helps to achieve a mix and match in order to make them enjoyable and not disrupt the eye. Unique details like ethnic motifs and patterns, African wood carved sculptures, hats and African crafts create alluring décor with these small prints. Modern wallpapers, decorative fabrics and painting ideas that bring animal prints into interior decorating enhance plain space décor and change the atmosphere in a particular space, adding exotic details. Furnishings, decorative accessories and furniture in neutral colors, black and white color

combination, golden yellow color tones and brown color shades work well with animal prints (Capella and Juli, 1988)

2.2.1.3 SAFARI-STYLE FURNITURE.

Most people often conjure images of British colonial-style furnishings which were characterized by big, heavy, dark wooden pieces which were paired with smaller stools, chairs and benches that were hand-carved by native Africans from natural wood, when they think of a classic safari-style room. These days designers have come up with an eclectic style which is an ideal mix of late-19th and early-20th century British colonial design and traditional African pieces to create stunning dynamic spaces. An example, is taking a classic sofa and pairing it with a traditional mud rug or with animal prints that can also match fabric in the space or the paint on the walls and ceilings. Another idea is taking the traditional African chairs like the watchman chairs and combine it with British colonial pieces. These chairs were hand carved from ebony, teak and other African woods.

There are two forms of decorating using African furniture, that is: using antique furniture from trading or colonizing countries and the other one is using antique furniture from the indigenous peoples of Africa. Most of the African décor is inspired by wild animals, nature, wood carvings and colored fabrics. Spaces with colors that are softly subtle earth tones create a relaxed atmosphere and a restful environment. In order to catch one's eyes, add some touches of natural greens, burnt umbers and reds or watery aqua as accents to create interest or diversion in the scheme. Bold reds add contrast with great dramatic effect. For example, painting a wall red in order to make brown mahogany mask or leopard prints curtains stand out (Balfour, 2003). To achieve a sense of balance and harmony and add extra visual interest, fascinating matching side tables and table lamps would be an ideal idea.

Wood and leather furniture offer comfy seating. According to Balfour, 2003, wooden furniture with simple lines allows the other elements in a space to make a statement and keen attention should be put in small details. For example, thick wooden shelves make a statement. Pieces like wooden dressers with faux ivory inlay are special adornment pieces. They represent all the unique furniture that can't necessarily be described, but fits perfectly into safari room. When it comes to chairs, one should be able to balance between simple and ornate. Slipper styles and sans tufting will look great alongside ornate chests as they will intricate masterpiece chairs alongside wooden shelving. For couches, stick to straight backed with clean lines, possibly even with simple wooden arms and legs. Leather chairs and couches work well in Safari theme and a dramatic statement can be made with an animal print upholstery, as long as it is surrounded by complementary elements.



Figure 2.0 & 2.1 African safari inspired furniture (Source: Pinterest).

2.2.1.4 WALL DÉCOR.

There are various African accessories including masks, drums, gourds, vases and figurines that can be added in a space to create a beautiful safari themed room. There is an empress of African accessories on the market that will help you create an exotic collection of wall art, pottery, table art, sculptures, baskets, and vases. African animals, the lion, the leopard and the zebra, play a huge part in African culture and their symbolism can be found out throughout countless pieces of art and sculptures. The lion symbolizes strength, courage, royalty and pride and the lioness represents femininity, the moon and motherhood. The leopard is known as the “Great Watcher” and is a symbol for agility, cunning and ferocity. It is highly revered in African cultures as a master hunter due to its secrecy and mystery. The zebra symbolizes freedom, individuality, friendship and unity. There are fake decorative pieces found in most interior shops and these designs and prints are said never to go out of fashion when used in proper setting. Prints are like the backdrop to any safari décor room.

When it comes to wall décor, the art put on it must blend with the other tones. Accessories and wall décor add a lot of charm and interest to safari themed room. There are so many options for wall décor. For example, using a wallpaper with a pattern that stimulates the skin of a reptile or color of wild animals. Another idea is combining the wallpaper using plain plaster -like one with textured one, simulating exotic leather. One can add some brightness by making a curb that has African ornament or it may be simply of a paper or painted in different colors. Color scheme and wall décor work well together. They both use the same principles. According to Balfour, 2003, they must have that harmonious feel in order to give the space the desired effects. Walls can be decorated with painted silhouettes of animals. One can also add nobility to the walls through a grid of thin cracks, imitating African soil which is cracked by the drought. Another idea is lining part of the wall with African fabric pattern and if it is the bathroom or kitchen, the wall mosaic or tiles with imitation

reptile skin texture would be perfect. Handcrafted accessories are mostly made from sustainable sources like renewable wood, natural dyes, renewable materials etc.

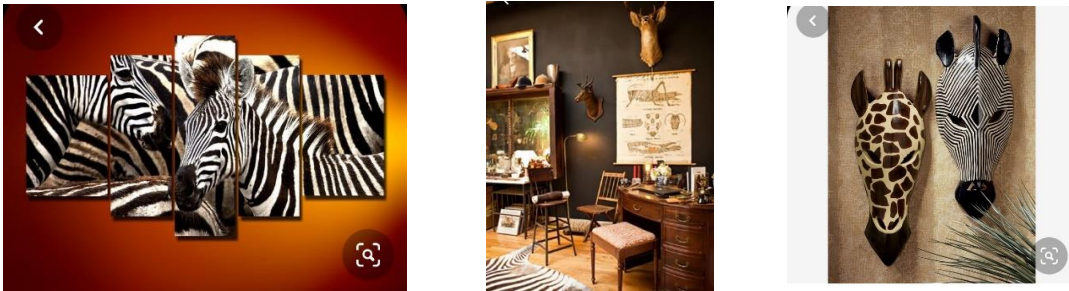


Figure 2.2, 2.3 & 2.4 Africa Safari wall decor

Source: Google.

2.2.1.5 SAFARI COLOR SCHEME.

Color schemes are used to create style, appeal and an aesthetic feeling in a room. Color affects system theory was developed by a prominent color psychologist and author Angela Wright and this theory was scientifically validated and proved that color affects people in universal and specific ways. Therefore, people react to color in a different way depending on its intensity. For instance, a bright yellow room will stimulate a creative person whereas a pale soft yellow room will soothe the person. To achieve a safari color scheme, one should use an earthy color palette. Earthy colors form a great backdrop for a safari themed room. Color is very important in creating the feel of an African safari. Use colors that are found in nature (Balfour, 2003, p. 62). Browns, taupe, creams or golds on the walls echo the colors of the African savanna and create a warm atmosphere in a safari room. These rich neutral colors also convey the warmth of the plains and desserts. On the other hand, accent colors like rusty reds, burnt oranges and olive greens complete the look and keep the space looking natural and inviting and give a sense of sunsets and the savannah.

The use of colors in animal prints create a visual feel of the safari theme. African textiles usually feature strong colors and patterns created with hand-painted or hand-blocked designs. These vibrant colors and contrasting patterns often carry over to wall treatments as well as furniture upholstery and finishes. Therefore, wall colors should match the furnishings in the safari themed room. Any color of the rainbow is an available option in safari style due to the diversity of the African ecosystem. Rainforests and jungles offer up an abundance of green plants and flowers in stunning jewel tones. Colors are coordinated from the ceilings to the walls and all the way down to the floor. The walls that come in lighter color go well with animal print furnishings. Darker colors can be

used when neutral colors have been used on the architectural features. Black color shades create drama into African decorating (Mahnke, 1996).



Figure 2.5 & 2.6 Africa Safari color scheme

Source: Google

2.2.1.6 FABRICS.

The stunning beauty of fabrics comes into play through hints and accents that support the architecture, colors, furnishings and window fashions of a safari room. When it comes to choosing fabrics, choose based on your desired theme. Fabrics make a fabulous style statements on elegant and highly embellished throw pillows as well as on stunning sofa, bed and chair throws. They can also be shown off in tapestries, lamp shades, tables skirt and runners and through other smaller furnishings and accent pieces. For the smaller fabrics, they should be used to play with pattern and textures. Fabrics conjuring bold jungle patterns as well as those with subtle shades can be balanced to create an elegant and interesting look. One should also use several coordinating prints and a good variety of textures. Fabrics with animal prints on them is a more literal interpretation that brings out the safari theme clearly to be eye-catching. Take caution not to overdo the animal prints. One can also use color on the fabrics to add punch and pop to the fabric. For instance, for the window curtains, use richly colored fabrics to go along with the safari theme.



figure 2.7 Africa safari inspired fabric

Source: Google.

2.2.1.7 INTERIOR LANDSCAPING.

Bringing the outdoor lushness of plants indoors is calming for the soul, nourishing to the spirit and creates a welcoming interior. Interior landscapes contribute to the overall aesthetics of a building. Adding plants to a safari themed room complete the safari décor if done correctly. Plants can add a finishing touch to any safari themed room. They brighten dark building corners, bring color and life to empty spaces and provide sights and fresh smells. Trees and shrubs and leafy palms are a good choice for unoccupied corners. Potted bamboo is commonly used in indoor setting since they require less lighting and maintenance. These plants do not necessarily need to grow thus they can take roots in glass beads or pottery that complement the theme. Flowers such as jacaranda, artificial or live, can also be used to complement the safari style. There should be a prevalent grassland in a true Africa safari landscape. To achieve the grassland look, one uses the colorful succulents and bonsai tree. The succulents and rocks in a long planter make attractive centerpieces. Also, small figurines of animals like giraffes, elephants and lions are good centerpieces for tables.



Figure 2.8 Interior Landscaping

Source: Pinterest.

2.2.2 BIOMIMICRY.

Humans have always looked to nature for inspirations to solve problems. Learning about nature and learning from nature is another. Only through nature's wisdom will we find the possibility to survive as species. Imagine a world where everything we make is inspired by and connected to the natural world. Otto Schmitt, an American academic and inventor, coined the term biomimetics to describe the transfer of ideas from biology to technology. Therefore, mimicking nature requires understanding the differences between biological and technical systems. The term biomimetics only entered the Webster dictionary in 1974 and is defined as the study of the formation, structure or function of biologically produced substances and materials, as enzymes or silk, and biological mechanisms and processes as protein synthesis or photosynthesis especially for the purpose of synthesizing similar products by artificial mechanisms which mimic natural ones. The term biomimicry was popularized by scientist and author Janine Benyus in her 1997 book *Biomimicry: Innovation Inspired by Nature*. Biomimicry is defined in her book as a new science that studies nature's models and then imitates or takes inspirations from these designs and processes to solve human problems. In her organization "biomimicry 3.8", Benyus suggests looking to nature as a model, measure and mentor and emphasizes sustainability as an objective of biomimicry. Janine Benyus founded the Biomimicry Institute, the global leader in the field of biomimicry.

Benyus argues that there are three levels of mimicry that a full emulation of nature engages: form (organism), process (behavior) and eco-system (Benyus, 2008, p. 40). Therefore, biomimicry is more than just reproducing a natural object or system nor is it simply designing something considered sustainable or green. On the form level, it is the close examination of how the organism participates in a larger context with its environment because an organism always functions and responds in larger context. On the behavior level, is mimicking how an organism behaves or relates to its larger context. On the level of eco-system, its mimicking the natural process and cycle of the greater environment, while minding the application of the underlying design principles found in the natural solution. For a design to mimic nature on the eco-system level, it should follow the six principles below. Therefore, there are a number of components and processes that make up an eco-system and they have to work with each other not against each other for the eco-system to run smoothly.

In the book titled *Biomimicry: Innovation Inspired by Nature* by Janine M. Benyus, nine principles of nature were enumerated, which are the basic principles underpinning the concept of biomimicry. The nine principles are nature runs in sunlight, nature uses only the energy it needs, nature fits form to function, nature recycles everything, nature rewards cooperation, nature banks on diversity, nature curbs excess from within, nature demands local expertise and nature taps the power of limits. However, the biomimicry institute postulated the biomimicry principles which are an expanded and comprehensive version of the principles of nature. These principles are abstracted biological strategies, some of which are obvious and self-explanatory, that can be found in most of the organisms and which enable life to be successful in regenerating itself. According to the biomimicry group, the six major principles of biomimicry have twenty-three constituting principles. These are the 6 major principles of biomimicry according to Janine;

- **Adapting to changing conditions**

This is appropriately responding to dynamic contexts. It consists of five principles; *maintain integrity through self-renewal* (persist by constantly adding energy and matter to heal and improve the system); *embodying resilience through variation, redundancy and decentralization* (maintain function following disturbance by incorporating a variety of duplicate forms, processes or systems that are not located exclusively together); and *incorporating diversity* (include multiple forms, processes or systems to meet a functional need).

- **Being locally attuned and responsive.**

This is fitting into and integrating with the surrounding environment. It consists of five principles; *using readily available materials* (build with the abundant, accessible materials); *harnessing freely available energy* (use of solar/ renewable energy), *leveraging cyclic processes* (take advantage of phenomena that repeat themselves), *cultivating cooperate relationships* (find value through win-win interactions) and *using feedback loops* (engage cyclic information flows to modify a reaction appropriately).

- **Evolve to survive.**

This is the continuous incorporation and embodying of information to ensure enduring performance. It consists of three principles; *replicating strategies that work* (repeat successful approaches), *information reshuffling* (exchange and alter information to create new options) and *integrating the unexpected* (incorporate mistakes in ways that can lead to new forms and functions).

- **Be resource efficient (material and energy).**

This is skillfully and conservatively taking advantage of resources and opportunities. It consists of four principles; *using multifunctional design* (meet multiple needs with one elegant solution), *recycling all material* (keep all materials in a closed loop), *fitting form to function* (select shape or pattern based on need) and *using low energy processes* (minimize energy consumption by reducing requisite temperatures, pressures and/ or time for reactions)

- **Use life-friendly chemistry (creating conditions conducive to life)**

This entails the use of chemistry that supports life processes. It consists of three principles; *building selectively with a small subset of elements* (assemble relatively few elements in elegant ways), *doing chemistry in water* (use water as solvents) and *breaking down products into benign constituents* (use chemistry in which decomposition results in no harmful by-products).

- **Integrate development with growth.**

This entails optimally investing and engaging in strategies that promote both development and growth. It also consists of three principles; *combining modular and nested components* (fit multiple units with within each other progressively from simple to complex), *self-organizing* (create conditions to allow components to interact in concert to move toward an enriched system) and *building from the bottom up* (assemble components one unit at a time).

These principles are the deep principles that fuel and inspire deep sustainability. They are present in all organisms at multiple scales and levels. They are deep criteria for thriving and surviving on earth while creating conditions conducive to earth. Through these principles work is done to prevent superficial biomimicry. This is because each principles challenges human to think systematically within a broader context than a single organism.



LIFE'S PRINCIPLES

Biomimicry DesignLens

2.3 EXEMPLARS.

2.3.1 KWANDWE GREAT FISH RIVER LODGE, SOUTH AFRICA

This is a 4-star lodge that has a classic-contemporary style of simple elegance that embraces its setting which is on a steep bank overlooking the Great Fish River. The color scheme is normally calm and natural palette of earthy tones from khaki browns to charcoal greys. Pewter and glass add glamour to the furnishings and on top of that artifacts such as hides, horns and ostrich eggshells create subtle points of interest and relevance to the surroundings of the lodge, while linens and a lot of texture preserve its simple but yet modern atmosphere. The stone walls, thatch roofs and the long wooden walkways blur the distinction between the inside and outside by bring the natural materials into the interiors. The rooms have been designed to take full advantage of the beautiful scenery by use of floor-to-ceiling glass doors which offers unmatched views over the landscape beyond. The rugged natural materials like rock, thatch and stone blend with soft-light lanterns, overstuffed sofas with thin contemporary lines and natural linens provide simple but sophisticated atmosphere.



Figure 2.9 & 2.10 Kwandwe Great Fish River Lodge

Source: Google.

2.3.2 AFRICAN HERITAGE HOUSE

The African Heritage House also known as “Africa’s most photographed house” overlooking the Nairobi National Park is described by architectural digest as “an architecture rising from the serene Kenyan plain like an outcropping of earth, a vision of usefulness informed by the African genius for decoration”. It was designed by Alan Donovan who together with Joseph Murumbi travelled across Africa collecting art and books. This house hosts a wide range of African collection ranging from art and African inspired furniture to rare artifacts which are considered priceless. Alan Donovan said and I quote “an equally important reason for my home is to show people how to live with African arts and crafts. I think this indigenous artistic and cultural heritage is under appreciated, both in Africa and worldwide. My house is a step toward preservation”. This particular house should be a motivator to each person that our African values should be preserved at all costs. The house is a combination of the mud architectures from across Africa. The color scheme, not only the exterior but also the interior, they blend well with surrounding environment. The landscape of this house comprises of trees that are indigenous to the area which are mainly acacia and the vegetation. Therefore, it is made up of plants that do well in dry areas.



Figure 2.11 & 2.12 African Heritage house

Source: Google.

2.4 RECYCLING.

In the recent years, the concepts of sustainable interior and eco-friendly interiors have been increasingly used. A new approach to the design of interiors has been implemented. Sustainable interior design is focused on the living quality of users, but also on the effect of applied principles on the environment. Quality instead of quantity remains a valid concept. Today more things are serving dual purposes. Recycling isn't new. Paul Revere was a well-known eco-entrepreneur who reused scrap metal as a metalsmith. All of us are recyclers at some level. Taking refuse directly out of waste stream and redeploying it is another way to act and design responsibly. Environmentalists are breaking new grounds every day in finding ways to use waste. For example, recycled tire can be used deck coating for playgrounds and athletic tracks. Environmental design is a worthwhile investment, as it often results in lower long-term costs.

Sustainable design aims at reducing or completely eliminating negative environmental impacts through thoughtful designs. With a view to recycle and reuse, making the world greener and reducing landfill, many are using recycling as a way of preserving the earth from further damage. It reduces strain in the environment and wallet. Recycling is taking the interior design by storm especially in the latest trend in furniture renovation. Breaking the boundaries, designers across the world are seeing art through anything that can be shaped, molded, painted or sanded. The unique ideas of recycling offer designers an opportunity to create an individual look or theme. Fitting in with contemporary interior design, recycling gives designers freedom to experiment with materials, colors and finishes as large or small as their imagination stretches. From creating statement pieces to finishing off a room, recycled furniture is that unique stamp designers can put on a room and

claim as their own. Effectively for designers, upcycling is the perfect three- dimensional logo-a signature piece that no other person can replicate but will always be remembered.

2.4.1 DESIGN PROCESS OF RECYCLING TIRES.

There are many creative ways of recycling and reusing bike and car tires and turning them into garden decoration and artworks. Recycled tires can be used for house design, outdoor and interior landscaping and unique furniture design. Old tires are a beautiful material for DIY projects, green building on a small budget, outdoor and interior decorating. Unique furniture, décor accessories, yard decorations, sheds, staircases, fences and walls built with used tires are fantastic ways to reuse and recycle. Recycled car tires can be simple, easy and attractive.

Recycling old tires for unique furniture.

Modern tables, chairs, wall shelves and garden benches are a wonderful idea to reuse and recycle old tires. Tires piled up junk yards provide great opportunities to create unique furniture and get rid of clutter. Handmade furniture made from recycled tires have many uses. It can personalize outdoor living spaces and home interiors while proving functional furnishings. Recycling old tires saves on money and a lot of energy and allow to show the artistic nature bringing unique furniture and décor accessories into homes.



Figure 2.13 Modern chair displayed on recycled and painted white tires.

Source: Google.

Recycling tires for walls, steps lighting and bathroom sinks.

Decorative walls, steps, whimsical light fixtures or planters and even bathroom sinks are just a few ideas to reuse and recycle tires in a creative way. Used tires are not waste. They can be used in making practical and eco-friendly products for house design and decorating. Reusing and recycling

tires mean that industries do not produce new materials. It saves on energy and resources and protects the environment.



Figure 2.14 unique lighting fixture



Figure 2.15 Bathroom sinks

Source: Google.



Figure 2.16 recycling tires for yard landscaping steps

Source: Google.

Recycling tires for parquet flooring.

Swedish company Apokalyps Labotek is a design company dealing with recycling of tires to form flooring materials. Petra Lilja and Jenny Nordberg, both industrial designers are the pioneers of this new design flooring options. The design process involved is grinding of the tires into powder, which is then mixed with recycled plastic and formed into flooring. The resulting material is quite colorful and pleasant to look at.

The design process.

The advantage of using tires to create furniture is that it looks like black leather and it doesn't break and can be used for many purposes depending on one's own creative impulses. The furniture will include refurbished parts of recycled tires which embrace the unique textures of the tread. The tires maybe cut, stamped or punched to create new products after cleaning the recycled materials to remove debris and steel. These methods reduce the cost of using recycled materials because of the complexity involved in breaking down tires for use into new products. The process of creating tires for durability also makes their recycling more problematic when it comes to breaking tires down chemically.

2.4.2 DESIGN PROCESS OF RECYCLING WOOD.

The use of recycled wood is not new in interior architecture. Several designers have venture into using reclaimed wood for the design of ceilings and wall finishes creating tropical moods in interiors. Recycled wood is also used in sustainable design of furniture and exhibition facilities as such as shelves. Reusing wood from old buildings, demolished barns or old shipping crates can save on money, preserve trees and add character on to decorative projects. Leftover construction lumber and wood removed from the demolition of a building maybe in good enough shape to reuse for studs and structural beams. Old barn boards make rich and interesting wooden floors. Wooden pallets and smaller construction scraps are good sources of wood for small projects (Cutlip, 2012). The process of recycling wood is as follows;

Step1: Inspect the wood for warping, rotting and insect or water damage. Hold one end of each stud or long board at eye level and look down the length of the board to see warping and twisting. Gently poke any discolored areas with a screwdriver to make sure the wood is solid and not rotting and waterlogged. Discard any wood that is too warped for your project, is soft or has black mold on it.

Step2: Remove all the nails. Place a nail puller around the head of the nail, or slide the tines on the back end of the hammer under the head of the nail. Use leverage to work on the nail out of the wood.

Step3: Measure the length of the boards and studs and sort into same-length piles so you will be able to grab the appropriate lengths as you are building.

Step4: Saw your wood into the proper lengths and sizes for your project.

Step5: Sand any wood that will be seen or that will be used for a decorative finish, such as a table or wood floor.



Figure 2.17 & 2.18 Hugo Franca natural wood furniture

Source: Google.

2.5 PHILOSOPHY IN RELATION TO INTERIOR DESIGN.

Interior design is all about people and how they live, realities of what makes for a civilized, attractive and meaningful environment, and not about fashion or what's in or what's out. (Albert Hadley, the story of America's preeminent interior designer). The interior design process follows a systematic and well-organized methodology, i.e. research, analysis and combination of knowledge into a creative process whereby the client's needs are satisfied. The following has to be offered for the researcher to achieve the African inspired design; accessories, furniture selection and designs, color scheme, planning of space and selection of fine art.

Africa as a source of inspiration can help bring out a unique yet an irresistible environment. Africa is a beautiful and exotic place, with a rich cultural heritage and is characterized by unique interior design. Today Africa is announced as the continent of possibilities. Designers throughout the world have already taken African culture to heart and are inspired by African culture for several reasons. They have taken different approaches but it all comes down to one thing, that is preserving our cultural values and practices for generations to come. There are plenty of ways to incorporate timeless African elements in interior spaces. African themed designs encourage designers to embrace the African culture and learn more from it.

Children living in orphanages that have vibrant, inspiring spaces not only make them feel loved and special but also help to stimulate their stunted development. Growing up in a pretty and creative building will surely have a positive impact on the children. Good design must consider all parts of the operation. If the front of the house is not designed to support the back and the back not designed to carry out the concept in the front, then the operation breaks down (Baraban and Durocher, 1989).

2.5.1 FURNITURE.

African inspired furniture has some qualities related to traditional furniture and they are material, fabrics, size and features. Each piece of furniture has to be closely related to the design and weight to all the surrounding pieces. The function of furniture is not only to provide the desired purpose but also to give the space a sense of visual interest and style (Capella & Juli, 1988).

2.5.2 EXHIBITION AND DISPLAY.

According to a famous graphic designer Lindon Leader, “design is born of two things: simplicity and clarity”. In order for visitors to be aware of an existence if a certain establishment as children’s home, signage should be there and a unique identity is needed. This enables the visitors to know where its located. Signage examples include billboards, signs (inside and outside the premises). This will go hand in hand with advertising. It is an essential concept when designing.

2.5.3 INTERIOR ARCHITECTURE.

The interior should not rely on the latest trends. It should reflect the inhabitants. There are basic interior design principles that can be used to make an interior of a place look fabulous. These design principles include:

Balance- in design, balance creates a feeling of equilibrium. It is all about equalizing or approximating the visual weight of objects. Balance is created not just through shape, but through color, pattern and texture as well. Balance can be achieved in three popular ways namely asymmetrical, symmetrical and radial. In asymmetrical, any odd number of elements can be used by keeping an imaginary central axis as the focal point. Though asymmetrical balance is a little hard to achieve when compared to symmetrical, the output is more natural and energetic. In symmetrical, a space is divided into two equal halves centered on a central axis and both the halves are equally compensated to give out a calm feel to the living space. Radial balance involves a central piece like chandelier or round dining table, from all other elements seem to radiate to arrange themselves in circular symmetry.

Harmony- can be achieved when all elements have been followed. It relies on the selection of elements that share a common trait or characteristics.

Unity- can be achieved by repeating a characteristic thus creating visual harmony in a space. Examples using monochromatic, giving a cohesive look by using similar textures (Stratton & Arthur, 1925). It stresses on the fact that there should be a sense of uniformity or harmony among all other elements.

Proportion- this principle ensures that objects placed in a space look like they belong to each other. Be it the size, dimension, shape or color of the object. For example, putting oversized furniture in a small room or vice versa it can cause a major design problem (Stratton & Arthur, 1925).

Contrast- this can be achieved through three elements namely color, form and space. This is the difference in the luminance or color objects that differentiates them from one another. For example, one can use pillows or prints of two opposite colors like black and white to achieve contrast and make an object distinguishable. It can be achieved by combining two or more forms.

Details- these are like cherries on an ice cream; they might seem extra but without cherries the ice cream isn't just complete. Be it small embroideries on a pillow cover or the color within those embroidery patterns, every detail adds a little bit of life to the overall interior design, adding their own distinctive feature to the overall composition.

2.5.4 LANDSCAPE.

Landscape consists of two major parts; hard landscape (path and rocks) and soft landscape (vegetation). On top of that there are two types of gardens; formal and informal gardens. Formal gardens are characterized by shapes, forms and organized patterns while informal garden rely on how shapes and forms come together in a flowing pattern. Informal gardens must be organized and this depends on different design elements such as size, color (tall or short i.e. tall ones at the back and short ones at the front), forms and shapes (Reid & Grant, 1993). Repetition of identical plant form can help a designer to bring unity in a garden. Depending on their arrangement they can create harmony. Style, form, landscape type or integration of all of them, can help a designer to achieve a certain type of landscape.

Form- these forms are natural occurring, geometric or even a combination of both. Natural forms are more of informal and their arrangement is of natural look while geometric forms are mostly hard landscape such as the pathways and structures.

Style- these are cultural or historical gardens and contemporary designed gardens.

Types- this type of landscape depend on the function or the ecosystem. These gardens are recognizable by the plants that are commonly found in a specific area/ ecosystem.

When it comes to designing a garden, simplicity and creativity is vital and one has to study the landscape i.e. its form and also notice the features that can blend well in order to achieve the desired requirements (Reid & Grant, 1993).

2.6 SUMMARY AND CONCLUSION.

Africa Safari style is actually a major trend that is associated with Africa; therefore, it can easily be integrated in the children's home to form attractive and suitable interiors for the children. Also, when blended with biomimicry it can be used to come up with a completely different but yet functional form of design that will greatly improve the environment as well as the conditions of the Young Life Africa Children's home. Biomimicry will also be of great help to help come up with a trend- setting form of design. This is applied in all areas of study that is: interior landscape, furniture, exhibition and display and interior architecture.

CHAPTER THREE.

3.0 RESEARCH AND METHODOLOGY.

3.1 INTRODUCTION

In this chapter the researcher will introduce the types of research design. The data collection for this research will be qualitative in nature and quantitative approach will focus on obtaining numerical findings and will be used with the observation method. The researcher will also explain how the data collected will be analyzed for the research on the Young Life Africa Children's Home. Also, the researcher will state the population of the study and how the sample of the population will come up. In this section the researcher will also explain how the data collected will be analyzed and later how it will be presented.

3.2 RESEARCH DESIGN.

This will involve the overall strategy the researcher will choose to integrate the different components of the study in a coherent and logical way, and critically addressing the research problem. Based on the problems that will be critically examined and identified at the Young Life Africa Children's Home, the researcher will come up with a simple design that will help come up with a sustainable design and a suitable environment of the Children's Home. According to Robert Yin (Yin, 1984, p. 23), he gives the steps below that can be followed in acquiring an accurate information:

- Critically examining and understanding the problem and analyzing it.
- Coming up with the research questions.
- Determining the data collection methods and data analysis techniques.
- Data collection preparation.
- Data collection.
- Evaluating the data collected and analyzing it.

3.3 POPULATION.

3.3.1 TARGET POPULATION.

The target population will be taken from the children that live at the Young Life Africa Children's Home. The study will comprise the manager, the staff and children to Youth Life Africa Children's home.

3.3.2 SAMPLE POPULATION.

The sample will consist of manager, employees and children to Young Life Africa Children's Home.

Table 3.0: Table showing frequency distribution (Author, 2020).

POPULATION CATEGORY	FREQUENCY	PERCENTAGE
Manager	1	6.7
Staff	2	13.3
Children	12	80.0
Total	15	100

3.4 SAMPLING PROCEDURE.

Purposive sampling is used to select the manager. Random sampling will be used to select the staff while stratified random sampling will be used for the children. Random sampling is generally considered desirable as all members of the population will have the same chance of being selected thus the results will be less biased.

3.5 METHODS OF COLLECTING DATA.

There are two types of data; primary data and secondary data. The primary data will be derived from the answers of the respondents, that is, first-hand data collected using methods like interviews. On the other hand, secondary data will be derived from the findings stated in published articles and documents.

3.5.1 PARTICIPANT OBSERVATION METHOD.

Observation method is a method under which data from the field is collected with the help of observation by the researcher or by personally going to the field. In the words of P.V. Young, "Observation may be defined as systematic viewing, coupled with consideration of seen phenomenon". It enables one to gain insight about the group that cannot be obtained in any other way (Creswell, 1998). In participant observation, the researcher recorded natural behavior of the group, since it enables one to observe behaviors and emotions in a natural setting that would otherwise not be perceived.

3.5.2 INTERVIEW METHOD.

This is the method of collecting data that involves presentation or oral-verbal stimuli and reply in terms of oral-verbal responses. This is an oral verbal communication where the interviewer asks questions (which are aimed to get information required for the study) to respondent. Face to face interview method of collecting data creates an informal relaxed environment. It enables the researcher to establish rapport with participant and gain their cooperation (Leady, 2005, p. 184). Questions were asked to the manager, staff and the children to get quick and direct unaltered answers. Follow up questions helped the researcher expound and clear up contentious issues and was really time efficient due to instant feedback.

3.5.3 PHOTOGRAPHS.

In this method of data collection, the data captured is first-hand thus an untampered with. It gives the real picture on the ground. The researcher took photos of the existing furniture, structures, interiors and exhibition and display techniques used and also the landscape. Photographs show depth and detail that cannot be conveyed through words. Photos produce a different kind of information as evokes feelings, memories and information (Harper, 20002).

3.5.4 REVIEW ON EXISTING DOCUMENTS.

Online reviews of the visitors of the Young Life Africa Children's Home gave much insight as to the ratings of the place based on experience. The researcher also viewed documents like site maps, plans and artistic impression.

3.6 DATA ANALYSIS.

This is the most crucial part in a research. Data analysis involves the interpretation of data collected through the use of analytical and logical reasoning in order to determine trends, patterns and relationships. According to A Lacey, D Luff- 2001, there is no right way to analyze the data collected but it can be approached in several ways. After data collection, the researcher will gather all the information from all sources and observations, and make copies of all recordings forms to guide against loss and for future reference purposes. The first step the researcher will take of analyzing the data will be data preparation through three steps, that is; validating the data, editing the data and coding the data. These will help to convert the raw data into something meaningful and readable. In this section, the researcher gets familiar with the data, revisits research objectives, develops a framework and identifies patterns and connections through content analysis, visual analysis, site analysis and narrative analysis.

3.7 DATA PRESENTATION.

The researcher will organize the data collected for interpretation then come up with a presentation to explain his/her findings through pie-charts, bar graphs and photographs and exhibitions for better understanding of the findings.

3.7.1 PIE CHARTS

It represents data visually as a fractional part of a whole. They are generally used to show percentage or proportional data and usually the percentage represented by each category is provided next to the corresponding slice of pie. This kind of presentation gives data clarity since it helps identifying differences between the subjects involved. Readers see a data comparison at a glance, enabling them to make an immediate analysis or to understand the information quickly.

3.7.2 BAR GRAPHS.

In this kind of presentation, information passed through tables is well noticeable at a glance and easily interpretable. They have an ability to represent data that shows changes over time, which helps people visualize trends or patterns.

3.7.3 PHOTOGRAPHS AND EXHIBITIONS.

Photographs are important since elements being researched can be evaluated and their problem solved with ease since counting the number of problems as seen in the exhibition makes it easier to come up with a quotation of the recommendations.

3.8 LOGICAL FRAMEWORK.

Objective1: To establish the relevance of blending Africa safari and biomimicry in enhancing the sustainability of an interior space.				
Data Needs	Data Source	Data Collection Tool	Analysis Method	Expected Output
Determining the relevance of blending Africa Safari and biomimicry	Literature	Literature Review	Content Analysis	Knowledge of the relevance of blending Africa safari and biomimicry in enhancing the sustainability of an interior space.

Objective2: To determine how to blend Africa safari and biomimicry in enhancing the sustainability of an interior space				
Data Needs	Data Source	Data Collection Tool	Analysis Method	Expected Output
Strategies of blending Africa safari and biomimicry	Literature	Literature Review	Content Analysis Visual Analysis	Knowledge of the strategies of blending Africa safari and biomimicry
Objective3: To determine the African style themes that can be applied to create a stunning interior space.				
Data Needs	Data Source	Data Collection Tool	Analysis Method	Expected Output
Application of African style themes	Literature	Literature Review	Content Analysis Visual Analysis	Knowledge of the application of African style themes.
Objective4: To investigate the current state of the environment of Young Life Africa Children's home				
Data Needs	Data Source	Data Collection Tool	Analysis Method	Expected Output
Current environmental conditions of Young Life Africa Children's home	Young Life Africa Children's home Manager Caretakers	Interviews Photography Measurements Observation Note-taking	Narrative Analysis Visual Analysis Site Analysis	Understanding the current environmental conditions.
Objective5: To propose design solutions for blending Africa safari and biomimicry while using recycled products in creating an appealing and sustainable interiors of Young Life Africa Children's home				
Data Needs	Data Source	Data Collection Tool	Analysis Method	Expected Output
How to blend Africa safari and biomimicry while using recycled products to create an appealing and sustainable interior for Young Life Africa Children's home.	Literature Young Life Africa Children's home Residents of the children's home	Photography Interviews Observation	Visual Analysis Site Analysis Narrative Analysis Content Analysis	Design solutions for blending Africa safari and biomimicry while using recycled products in creating an appealing and sustainable interiors of Young Life Africa Children's home.

3.9 SUMMARY AND CONCLUSION.

The research focused on the children of the Young Life Africa Children's home in the research methodology so that the researcher can get a clear understanding of the target group needs and expectations of a children's home environment. The different group's expectations will enable the researcher to come up with a comprehensive design solution to fit all the varying tastes. The methodology used ensured that the information gathered is relevant.

CHAPTER FOUR.

4.0 SITE ANALYSIS, PRESENTATION AND INTERPRETATION OF FINDINGS.

4.1 INTRODUCTION.

The Young Life Africa Children's home is located in Kenya, Kiambu county, Ruiru sub-county about 1.5km off Thika superhighway behind Kenyatta University Ruiru campus and approximately 35km from Nairobi. It is a local non-governmental organization. The home provides shelter for young boys between five and eighteen years. It is a home that rescue, rehabilitate, accommodate, educate and feed orphans and vulnerable children from the society. The project was started in 2003 March 15th in Huruma slums with slightly over 60 young neglected boys in the society with the sole objective of helping the disadvantaged children living in the slum of Mathare, kambi-moto, Huruma; Kariobangi from all forms of bondages, socially. Later the home was moved to Ruiru. The young boys have since graduated from various universities and on various occasions visit the home with their wives and children. The home currently hosts 37 children.



Figure4.1 Google earth map of the site

Source: Author,2020.

Young Life Africa children's home has instilled a culture of discipline and hardworking among the boys. Each boy owns roughly a 1/8 of an acre where he plants various crops ranging from kales, onions, tomatoes among others. The proceeds from the garden is divided in a 70/30 ratio where the boys get 70 percent of the proceeds and the home retains 30 percent. The harvest is then sold to the nearest markets within Ruiru Town. The 2013-2016 water, sanitation and irrigation project improved the living and health conditions at the children's home by increasing the focus on the

sanitation and hygiene, and the expansion of the vegetable garden to become a field for education that provides the children at the home with better opportunities for their future. The improved irrigation system reduced the time children needed to spend on watering and give them more spare time to be children. The project also established a mechanized and permanent water supply which provides the home with clean and safe water.

According to the Manager of the Young Life Africa Children's home, Mr. Fred Wanamambi, the home was established to empower the boy child. They mainly focus on nurturing the amazing talents the kids have like in artworks, carpentry, beauty stuff, designing etc. One of the staff members says, "No one has yet fully realized the wealth of sympathy, kindness and generosity hidden in the soul of a child. The effort of every true education should be to unlock that treasure." This home has been blessed with mother nature. They have a program to teach kids on how to take care of the environment. "Some people say that we should study to become climate scientists so that we can "solve the climate crisis". But the climate crisis has already been solved. We already have all the facts and solutions. All we need to do is to wake up and change," Greta Thunberg. Visitors are allowed to plant a tree, then appoint one of the children in the children's home to take care of it. Anybody across the globe is also welcomed to this noble program #AdoptATreeProgram. By July, they had already planted over 300 trees. The children are also taught on how to recycle and reuse bottles and shopping bags and beadwork.

4.2 QUALITATIVE ANALYSIS.

4.2.1 INTERIOR DESIGN.

Most of the interior space of the Young Life Africa Children's home is plastered and a range of colors has been painted. This space comprises of a kitchen, dormitory, washrooms, workshop and "empowerment" (Science and art section) room. All these spaces are on different locations. On the aspect of interior architecture, the children's home has utilized common materials that are recycled. The dorm and kitchen are made of masonry while the "empowerment" room is made of iron sheets. Some of the accessories have been designed from recycled materials such as used plastic materials.

4.2.1.1 FLOORING AND COLOR SCHEME.

The interior of the Young Life Africa children's home lacks any theme and any sense of style. The colors on the wall have been randomly painted. The whole floor area of the children's home is plastered apart from the washroom that is covered with tiles. The floor has worn out especially in the workshop area that is characterized with by portholes all over.



Figure 4.2 Dormitory floor



Figure 4.3 Kitchen floor

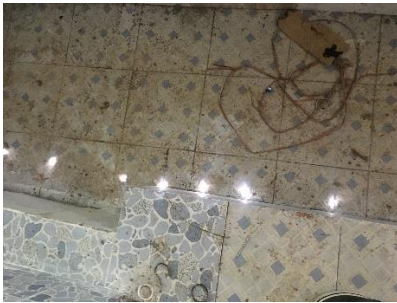


Figure 4.4 Washroom floor

Source: Author, 2020.

4.2.1.2 LIGHTING AND CEILING.

The interior spaces of the children's home have no ceiling. Therefore, when it's raining there's noise produced on the roof. There is lack of attention to lighting and acoustics that leads to creation of dark shadows in some areas. The Young Life Africa children's home is lightened by both natural and artificial lighting. The natural light comes in through the windows. The kitchen area has sky-light roofing. Solar panels have also been installed in the children's home therefore there is maximization of energy conservation. The wonderful thing about solar lighting is that even when there is a power failure, there is light in the home, which means the kids can do their homework at any time. The artificial lighting comes from the energy saving bulbs.



Figure 4.5 The roof



Figure 4.6 Kitchen sky-light roof



Figure 4.7 Dormitory lighting



Figure 4.8 Empowerment room lighting

Source: Author,2020.

4.2.1.3 WINDOWS, DOORS AND CIRCULATION SPACE.

The windows are made of glass and wooden paneling applied on the interior side of the window. The windows especially in the dormitory area don't allow efficient circulation of air. There is a lot of unutilized space in the dormitory and the kitchen. The strategic positioning of the doors allows easy movement of people around a space. The kitchen and the empowerment room have wooden doors. The dormitory has two metallic doors which are strong for security purposes. The windows allow light to be well distributed in the spaces. The circulation space in the children's home is well distributed and the children are able to move with ease.



Figure 4.9 Dormitory door



Figure 4.10 Kitchen door (pantry)



Figure 4.11 & figure 4.12 Kitchen windows



Figure 4.13 Dormitory window



Figure 4.14 Empowerment window

Source: Author

4.2.1.4 WASHROOMS.

The washrooms are in the dormitory area and are divided into three sections. There are three toilets and three bathrooms and urinals. The washrooms have no sinks or mirrors. The walls and the floor in the urinal section are covered with ceramic tiles which are easy to clean and maintain as well.



Figure 4.15 Washroom area (Source: Author, 2020).

4.2.1.5 THE KITCHEN.

The kitchen is divided into two sections; the main area where the cooking takes place and the pantry, where the foods are stored. The main area has a chimney. There is no high level of hygiene in the kitchen since the floor has no tiles making it hard to clean. The main source of energy for cooking is firewood. There are cabinets fitted on the wall which are used to store items that are frequently used in the kitchen.



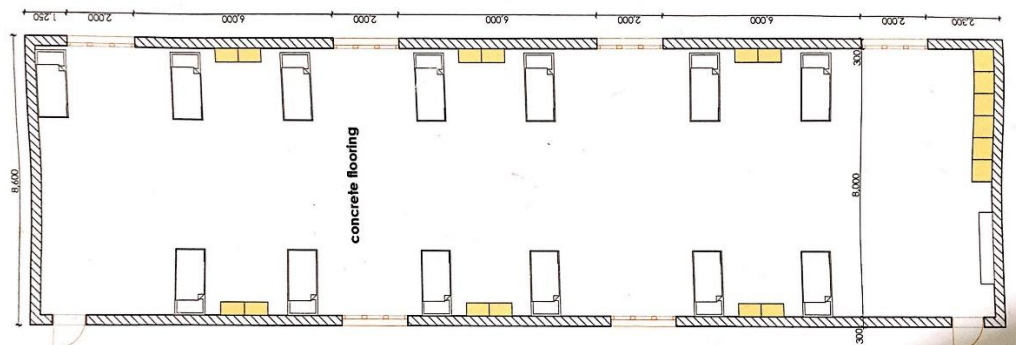
Figure 4.16 & figure 4.17 Kitchen area

Source: Author, 2020.

4.2.1.6 THE DORMITORY.

The dormitory has a lot of unutilized space. It is divided into two sections; the sleeping area and the washrooms sections. Shelves are fitted on the walls where the children keep their clothes. The

windows in the dormitory don't allow easy circulation of air. The floor in this area is plastered. There is poor artificial lighting in the dormitory.



Sketch of the existing dormitory.

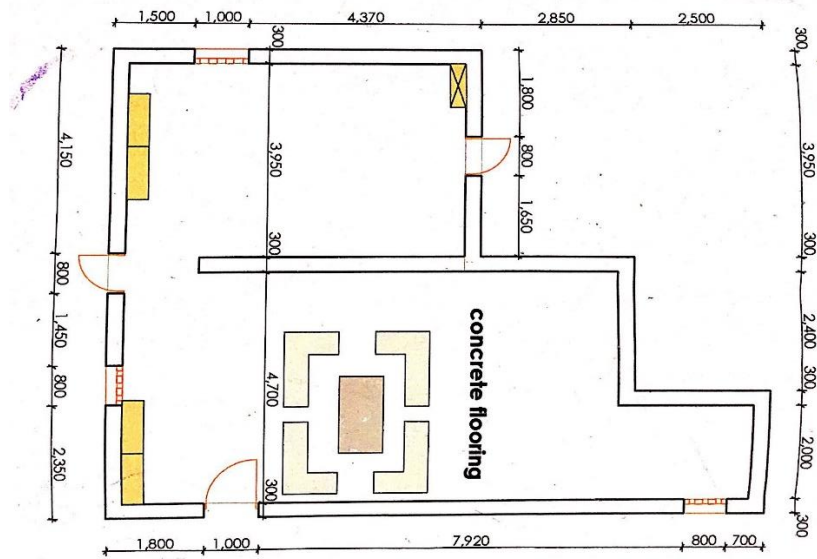


Figure 4.18 & figure 4.19 Dormitory area

Source: Author, 2020.

4.2.1.7 THE “EMPOWERMENT” (SCIENCE AND ART SECTION) ROOM.

The empowerment room is divided into three sections. It is made of iron sheets therefore there is no regulation of temperature in the room. The artificial lighting is not well-distributed in the room.



Sketch of the existing Empowerment room.



Figure 4.20 & figure 4.21 Empowerment room area

Source: Author, 2020.

4.2.2 FURNITURE.

The Young Life Africa Children’s home comprises of the outdoor furniture and the indoor furniture. Both furniture is exposed to different environments. They are both made of local softwood timber making the outdoor furniture face problems of decay except from the beds which are made of metal. There are different types of furniture including tables, benches, beds, shelves, shoe racks and cabinets. The furniture in the children’s home lack any kind of design principle and style. The benches and tables lack physical comfort and are ergonomically inappropriate. The benches lack armrests and backrests making it uncomfortable to sit for long. They also lack any element of aesthetics in them since the furniture is randomly painted thus lack any style and theme.

The tables and benches have unattractive form, shape and décor and lack a proper finishing touch giving the room a feeling of unfinished space.



Figure 4.22 Indoor furniture



Figure 4.23 Outdoor furniture

Source: Author, 2020.

4.2.3 EXHIBITION AND DISPLAY.

Exhibition and display problems are identified right from the main entrance. This is one of the many areas that have been neglected by so many people. People tend to term it as self-explanatory. There are no billboards constructed to show direction creating an identification problem. There is lack of notice boards in the children's home hence posters are stuck on the walls, leaving unsightly smudges on the wall when they are plucked off. The signage boards are made of recycled materials but they are not properly labeled hence causing eye-strain. They also lack style and color theme since they are randomly painted. The floating shelves in the dormitory are not aesthetically pleasing and lack proper finishing touch as well as the bookshelf in the empowerment room and the shoe rack. They all lack style.



Figure 4.24 Posters stuck on the wall



Figure 4.25 Sign post



Figure 4.26 The entrance

Source: Author, 2020.

4.2.4 LANDSCAPING.

The landscape is divided into two; soft landscape and hard landscape.

4.2.4.1 SOFT LANDSCAPE.

The landscape at the Youth Life Africa Children's home is mainly soft landscape. The main landscape is soft landscape that is very green and leafy. The ground cover is mainly scutch grass. The soft landscape consists of grass, plants, trees and flowers. There are exotic and indigenous trees. The soft landscape gives the children's home an exciting and fresh look without being monotonous. The area is surrounded by a well-shaped hedge fence.



Figure 4.27, 4.28 & 4.29 The trees and grass cover

Source: Author, 2020.

4.2.4.2 HARD LANDSCAPE.

When it comes to the hard landscape, a lot has been done to utilize the space. The pathways have a rough touch with loose rock pebbles being the access road finish material. Recycled bottles and old shoes have been used as flower pots. There is lack of proper organization and orientation. There is also lack of a proper demarcated car park. The greenhouse is not in a good condition. There is a rock water feature where water from the kitchen or excess water from a tap drains into the garden and the water is used by the ducks to swim. There is a section where small animal shelters have been constructed for the goats, rabbits, ducks and chicken. There is also a non-functional fish pond in that section. The children's home has a utensil washing area that's open and covered with tiles. There is also a firewood shed. At the entrance there is a gate house made of iron sheets.



Figure 4.30 The greenhouse



Figure 4.31 Pathway



Figure 4.32 Rock water feature

Source: Author, 2020.

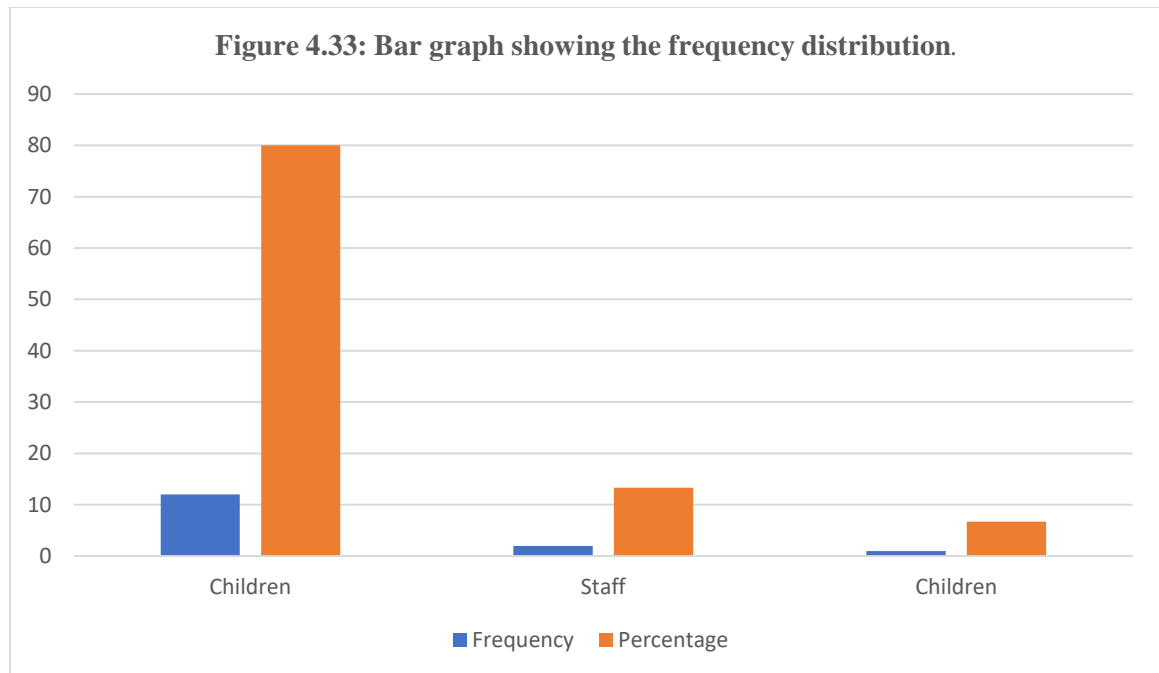
4.3 QUANTITATIVE ANALYSIS.

A sample population of 15 was used to collect data using questionnaire. This sample population was made up of 1 staff member (the caretaker), 12 children (residents) who were selected randomly and the managing director.

Table 4.0: Table showing frequency distribution, author 2020.

POPULATION CATEGORY	FREQUENCY	PERCENTAGE
Manager	1	6.7
Staff	2	13.3
Children	12	80.0
Total	15	100

The table above shows how the questionnaires were distributed to the sample population. The target population is mainly the children so its made up the highest percentage which was 80% followed by the staff working at the children’s home which was 13.3% and finally the management which was 6.7%.



4.4 PRESENTATION OF FINDINGS.

The Youth Life Africa Children's home lacks any theme and style; therefore, a lot has to be done to the interiors to create an appealing and suitable environment for the children and at the same time achieving the researcher's desired theme. The walls can be painted using colors that are more related and appreciate the Africa Safari décor i.e. earthy tones colors. Use of ceiling made of gypsum can be used since it economical and also sound proof thus this will help in reducing the noise produced on the roof especially when it's raining. The flooring has worn out and it is hard to clean and its time consuming. The building material of the empowerment room, iron sheets, is not durable and there is no regulation of temperature in the room. Use of recycled containers can be used as the building material for the empowerment room since its economical, durable and kind to the environment. There is lack of attention to the artificial lighting and acoustics. The windows especially in the dormitory does not allow proper aeration.

The furniture lacks any kind of design principle and style. The furniture has unattractive forms, shape and décor and not well furnished. The furniture is randomly painted therefore lacking any theme. The benches and tables are made up of softwood which is economical but not durable therefore it was not an excellent choice. The overall furniture lacks any element of aesthetics. The outdoor furniture faces the problem of decay since they made from local softwood. The benches and table lack physical comfort. The furniture makes the place boring and give it an unfinished look.

In exhibition and display, there is lack of notice boards, therefore notices and other works to be exhibited like artworks, are pasted directly on the walls creating unsightly patches on the walls when they are plucked off. The sign boards put up at strategic places are very helpful to visitors thus ensuring easy maneuvering but they are not well labelled causing eye-strain. The sign posts have also been randomly painted. The floating shelves in the dormitory, the bookshelf in the empowerment room and the rock rack are not aesthetically pleasing and lack style. Use of recycled materials and natural materials that can be modified to stand out can be used for this displaying units.

As for the landscape, they have tried to utilize the space but more can be done to create an appealing and suitable environment. The soft landscape gives the children's home an exciting and fresh look. The trees are exotic and indigenous. There are also flowers and shrubs. The ground cover is mainly scutch grass. Recycled products like plastics and old shoes have been used as flower pots but they are not aesthetically pleasing. The loose rock pebbles pose danger in case one falls. The non-

functional fish pond makes the area around it not aesthetically appealing. The rock water feature is useful since the excess water or water from the kitchen can be recycled and used by the ducks to swim. The greenhouse, though not being in a good condition (aesthetically appealing), it is still functional. It protects the crops from excess heat or cold and unwanted pests and makes it possible to grow some fruits and vegetables. The utensil washing area is not strategically placed. There is lack of proper organization and orientation.

4.5 CONCLUSION.

From research, Youth Life Africa Children's home overall design and layout lacks an appealing and suitable environment. Application of recycled materials is evident in furniture design, exhibition and display, interior architecture and landscaping design but they mostly lack any element of aesthetics and lack style, theme and any kind of design principles. The ignorance of some design principles and elements has led to an environment that is not appealing and suitable for the children thus denying them a sense of pride for their environment. Africa Safari décor blended with biomimicry while using recycled products can improve the image of the children's home.

5.0 SUMMARY FINDINGS, CONCLUSIONS AND RECCOMENDATIONS.

5.1 INTRODUCTION

This chapter discusses the summary of findings after the data has been collected and analyzed. The researcher uses the knowledge from literature to develop appropriate conclusions and recommendations that can be helpful to the Young Life Africa Children's home to making it have a better and sustainable environment for the children. This will focus on four areas of study: interior architecture, furniture, exhibition and display and landscape.

5.2 SUMMARY OF DATA ANALYSIS/ FINDINGS.

On the aspect of interior architecture, Young Life Africa Children's home lacks any theme as well as any sense of style. The colors on the walls were randomly painted. The windows don't allow efficient circulation of air. There is a lot of unutilized space in the dormitory. There is lack of attention to lighting and acoustics. The concrete floor has worn out especially in the kitchen area that is characterized by potholes all over. The roofs have no ceiling. There is maximization of energy conservation due to the installation of solar panels that saves on electricity bills.

The furniture at Young Life Africa Children's home lacks any kind of design principle. It lacks any sense of style and theme and is ergonomically inappropriate due to lack of armrests and backrests for the benches making it quite uncomfortable. The furniture lack physical comfort and aesthetics. The outdoor furniture is made of local softwood timber making the furniture face problems of decay. Both the outdoor and indoor furniture has unattractive form, shape and décor and it's not well vanished.

Exhibition and display has not been fully explored at Young Life Africa Children's home. The Empowerment room lacks notice boards hence posters are stuck with by glue directly on the walls. This creates unsightly smudges on the walls when they are plucked off. The floating shelves in the dorm are not aesthetically pleasing. The signage boards have not been properly labeled hence causing eye-strain.

As for the landscape, they have tried to utilize the space but more can be done to create an appealing and suitable environment. The landscape is mainly soft landscape that is very green and leafy and gives the children's home an exciting and fresh look. The trees are exotic and indigenous. There are also flowers and shrubs. As for the hard landscape, the pathways have a rough touch and with loose pebbles being the access road finish material that pose a danger in case one falls. Recycled bottles and shoes used as flower pots are not aesthetically appealing. The utensil washing area is

not strategically placed, therefore there is lack of proper organization and orientation. The children's home lack a proper demarcated car park. There's a greenhouse that is not in good condition. There is a rock water feature that is useful since excess water or water from the kitchen is drained and the water is recycled and used by the ducks to swim. There is a non-functional fish pond that makes the area around it not aesthetically pleasing.

5.3 RECOMMENDATIONS.

The researcher will focus mainly on blending Africa safari with biomimicry as a source of inspiration to create an appealing and sustainable environment. This will enable the researcher to come up with Africanized designs and at the same time nature inspired designs. The researcher will also focus on using recycled materials.

5.3.1 INTERIOR ARCHITECTURE.

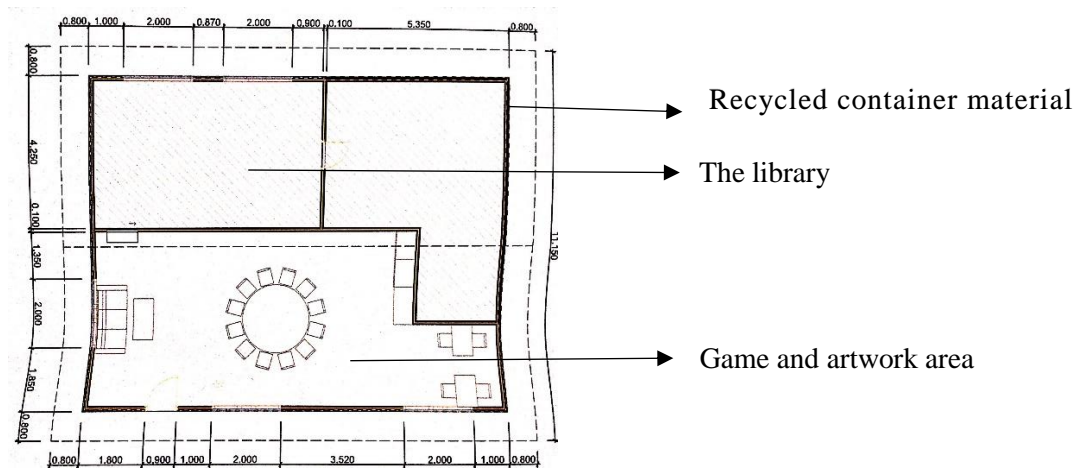
Recycled containers should be used as the building material of the empowerment room putting into consideration thermal performance, particularly during hot and cold weather. Recycled containers are durable, economical, easy to construct, sustainable and kind to the environment. The interiors of the children's home should be well designed in such a way that they relate to the Africa safari style of décor. The color scheme should be of earthy tones such as browns, red, grey and their hues to represent the wild look of the wildlife. This Africa safari color scheme should be applied to other aspects in that particular space such as the floor and ceiling to avoid overwhelming of colors. The paint used will be fire retardant. This is to ensure safety in case of a fire outbreak.

Both natural and artificial lighting should be improved. Natural lighting can be improved by adding more extra windows or expanding the existing ones to allow more light to come into the space and to allow circulation of air. For artificial lighting, energy saving bulbs or LEDs can be used to conserve energy and at the same time producing more light. For lighting in one section of the empowerment room and one section of the dormitory, wine and colored bottles can be used to create an ambient environment. Color has an incredible effect on mood.

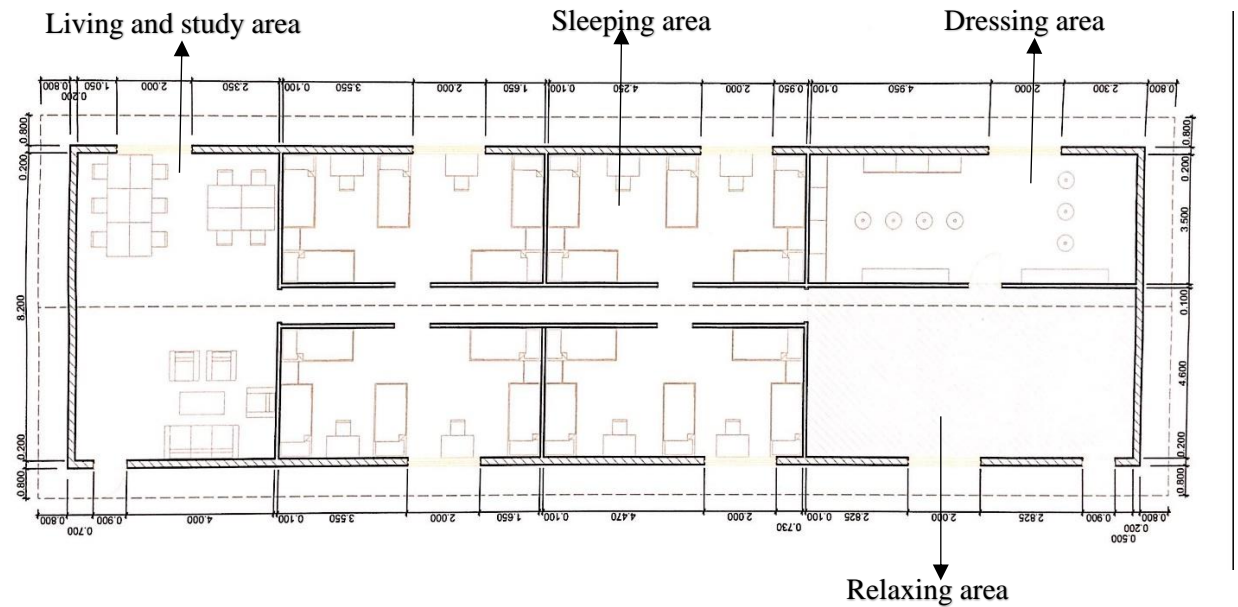
Solid hardwood flooring can be used in the empowerment room and dormitory since it is durable, easy to clean, has high quality look variety (offer a wide range of appearances since there are many colors, styles, strains and species), better acoustics (if well installed it never gives you hollow sounds or vibrations), healthy indoor quality and has ageless quality. The kitchen floor should be covered with ceramic tiles and the walls tiled halfway. This will make it easy to clean both the walls and the floor, therefore maintaining a high level of hygiene in the kitchen. Installing ceilings

made of gypsum would be an excellent choice since it is economical, fire resistant and sound proof. It is also labour friendly. Other sound proofing materials can be used like egg tray can be creatively aligned on the wall for sound proof and also tactile textural beauty.

The dormitory sleeping area will be divided into four sections: the living and studying area, the sleeping area, dressing area and relaxing area. The sleeping area will be divided into four units for privacy. Each unit will have five bunk beds therefore accommodating ten children in each unit. The Empowerment room will be divided into two sections; the library area and game and artwork area.



Sketch of the proposed Empowerment room.



Sketch of the proposed dormitory.

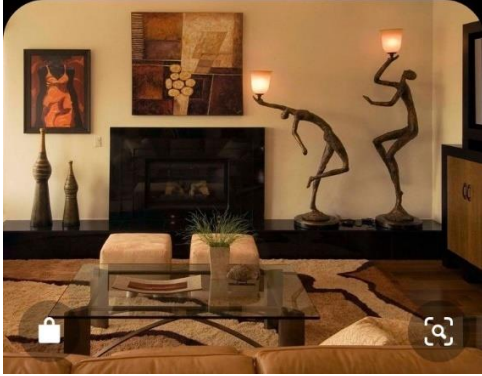


Figure 5.0 Color scheme



Figure 5.1 Recycled Container

Source: google

5.3.2 FURNITURE.

The furniture in the children's home should be inspired by the Africa safari theme and also biomimicry should be included, to come up with furniture that is Africanized and at the same time nature inspired. The researcher recommends wise design for the furniture, for example, putting into consideration the elements and principles of design like the furniture should have straight clean edges. Sustainable materials will be used such as wood and recycled tires. For the interior furniture, other materials such as wool and fabrics can be used for upholstery of mostly chairs. The upholstery material and color will be in accordance with the Africa safari décor like for example, use of animal printed fabric for a chair can produce this effect. The chairs should also have backrests and armrests for comfortability while sitting. Tables can be made using reclaimed wood like logs which can be vanished and used as it is. This will give the furniture an African safari look theme.

Recycled rubber can be used in designing the exterior furniture as it does not experience degradation from environmental factors such as rain and it is long lasting, easy to clean, relatively cheap to produce and easy to color to achieve the desired theme. Biomimicry theme can be adopted in the outdoor furniture like for examples making bird's nest chairs using a sustainable material such as sisal since it provides the desired color tone of the designer. The outdoor furniture should be designed with parasols to protect the children or even visitors visiting the children's home from the sun. A pergola will also be constructed to accommodate a large number of visitors.

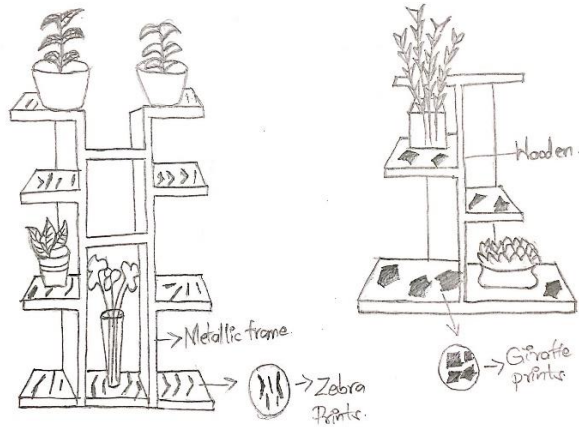


Sketch of the proposed chair.

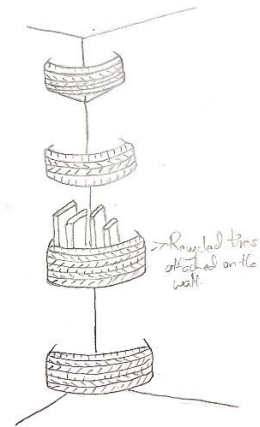
5.3.3 EXHIBITION AND DISPLAY.

A billboard will be constructed outside the children's home for identification and direction purposes. Signage boards should be erected at strategic points that lie at the eye level ranges and should be well labelled to avoid strain and as much as possible adhere to the safari theme. Signage will also be introduced outside the premise. Notice boards that blend in with the elements in the space and color will be centrally placed and exhibition and display units will be placed to solve the problem of pasting artworks directly on the walls. Recycled and natural materials will be used in creating display units like the bookshelves, flower units, shoe rack and floating shelves, that can be modified to stand out and be aesthetically pleasing. Animal prints and carvings should be incorporated in the overall display. Art pieces such as mosaics, animal print engravings and wallpapers should be acquired and displayed on the walls to avoid long stretches of empty and plain walls and also to improve the interior aesthetics with art.

FLOWER SHELVES



SHELVES (Attached to corner)



Sketches of the proposed display units.



Figure 5.2 Sign board



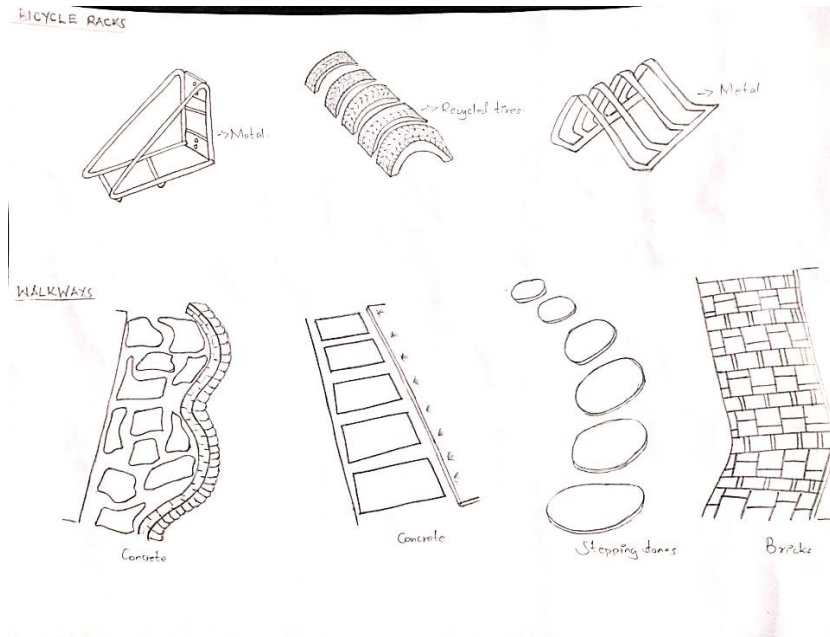
Figure 5.3 Floating Shelves

Source: Pinterest

5.3.4 LANDSCAPING.

The use of straight, defined lines in the landscape should be balanced with the Africa safari style which is similar to nature’s irregular manifestation of vegetation in nature. The landscape will be designed in a way that it flows effortlessly to the indoors. Trees planted should be manageable in order to allow shaping from time to time. There is need to develop a waste management plan in the landscape. Hard landscape materials such as natural stone, concrete, gravel, bricks, and mazers, will be used in walkways and pathways instead of walking on grass and loose pebbles. Cabro will be an excellent choice for a well demarcated parking with car shade. The car parking area will be

divided into two: large area for car parking and the small section for bicycle racks. There will be up-lighting along the pathways. Outdoor lighting will be necessary for security and safety while walking at night. A gate house with toilet facility will be constructed. Arbors will be constructed along garden paths. There will be a healing rock garden. The playground area in the lower field will have swings. The researcher will get rid of the fish pond and the greenhouse redesigned to be aesthetically pleasing.



Sketches of the proposed bicycle racks, pathways and walkways.



Figure 5.4 Swings hanging from tree branches



Figure 5.5 Arbor

Source: Pinterest

5.4 CONCLUSION.

In summary, by applying the above recommended solutions, the Young Life Africa Children's home can be transformed into an appealing, suitable and sustainable environment for the children. This will also allow it to keep up with the current global trends whereas the Africa safari décor facilitates the conservation and preservation of our rich African culture and spirit. Growing up in a pretty and creative and sustainable environment will surely have a positive impact on the children.

5.5 SUGGESTIONS FOR FURTHER STUDIES.

The researcher covered all the four areas of study; interior architecture, furniture, exhibition and display and landscaping, but did not exhaust them. A lot of data was collected and analyzed but further studies can be carried out in similar projects. Other individuals, groups and researchers are allowed to use this research and also add their own studies to it.

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APPENDIX

UNIVERSITY OF NAIROBI

SCHOOL OF THE ARTS AND DESIGN

INTERVIEW GUIDE

SECTION A: MANAGEMENT.

1. What is the historical background of the children's home?
2. What is the holding capacity of the orphanage?
3. What are your views on the current materials and general design of the children's home?
4. How often does the management undertake renovations in the orphanage?
5. What factors influence the choice of materials use in time to time redesigning and renovation used in the design?
6. Would like the children's home redesigned with a general theme?
7. What are some of the design solutions in your opinion can be utilized in improving the general design of the children's home?

SECTION B: STAFF.

1. What are your views on the current materials and general design of the children's home?
2. Which areas and materials do you normally experience challenges with during your day to day chores? How have these materials affected the environment?
3. What design related concerns are normally raised by the children?
4. In your opinion, what are your suggestions towards enhancing an efficient and sustainable working environment design?
5. What are your views on recycling-based design?

SECTION C: CHILDREN.

1. What are your views on the current materials and general design of the children's home?
2. What are some of the challenges and dissatisfactions do you normally encounter from some of the materials used and facilities in the design of the children's home? How have these materials affected the environment?
3. What facilities/ areas would you like to have redesigned and enhanced?
4. Has the children's home satisfied all your needs and wants?

