CHAPTER ONE

1.0. INTRODUCTION

1.1. BACKGROUND TO STUDY

Nothing is more important than giving a child the best education available, while having fun. Play, or playfulness, is an important factor in education. For children, play is a critical way to find out about new things. The ability to play is instrumental in scientific exploration, discovery and creativity. As Huizinga Johan (1872-1945) points out, play and joy are essential to all human activities. In the field of positive psychology, theorists such as Mihály Csíkszentmihályi argued in his Flow Theory that human beings can best perform when they are totally immersed in joyful activities.

In recent years, educational philosophy has made a shift from traditional teacher-centered instruction to a more interactive, engaging, experiential method, particularly in the U.S. John Dewey and other theorists who incorporate cognitive psychology into their theories of education pointed out the importance of initiative and excitement on the part of the child in learning and emphasized learning as a life-long activity fundamental to human existence. Dewey in particular also noted the importance of problem solving skills and the need to develop creativity; he perceives that education should not be a boring or painful process. Due to Dewey's influence, education in the U.S. began to use experiential, engaging methods. Among contemporary education theorists, Nel Noddings, in her *Happiness and Education,* has been critical of the current education system and argues that education should be directed toward the fundamental goal or purpose of human life, happiness.

Many theorists argue that joy and play are fundamental to human existence. Johan Huizinga (1872-1945), a cultural historian known for The Autumn of the Middle Ages, defined human being as "homo ludens" (man the player or a being who plays) in contrast to such concepts as "homo sapience" (man the knower) or "home faber" (man the maker). In his Homo ludens; a Study of the Play-Element in Culture, Huzinga argued that play is fundamental to all cultural activities including religious activities, sports, arts, and even wars. He conceived all cultural activities as an extension or forms of play.

In the area of psychology, Mihály Csíkszentmihályi presented a theory of "Flow" and pointed out the positive role of play in learning. Flow is the mental state of operation in which the person is fully immersed in what he or she is doing by a feeling of energized focus, full

involvement, and success in the process of the activity. The combination of these is known in recent time as edutainment. Educational entertainment (also referred to by the portmanteau neologism edutainment) is content designed to educate and to entertain. It includes content that is primarily educational but has incidental entertainment value, and content that is mostly entertaining but contains educational value.

Educational entertainment has existed for millennia in the form of parables and fables that promoted social change. In Christianity, for example, Jesus Christ used parables extensively to convey his moral messages. As Matthew 13:34 and Mark 4:34 report: "He did not say anything [to the crowd] without using a parable." The canonical gospels contain 33 parables, excluding allegories or proverbial expressions. Christ invoked imagery from the environment and daily life of the people of the time, including the food and drink they consumed (e.g. leaven, wine), the birds and animals they saw or domesticated (sheep), the vegetation (wheat, fig trees, lillies), the clothes people wore (wedding dress, patching old garments), the jobs they worked in (fishing, shepherding), even the currency (the denarius).

Although edutainment was often used for computer game type activities, the concept also applies to broader fields. Children's edutainment centres (where children's young minds can be expanded through playful activities and entertainment) matter. They matter to the families and children who use them, to the staff who work in them and for them, to the local authorities who are accountable for them and to those who share the ambition to reform the way in which public services are organized and delivered. What makes children's centres so distinctive is the collaboration and co-operation of different professional groups, and how they bring together services for children and their families in new and radical ways. Instead of defining families as hard to reach, children's centres have recognized that it is sometimes their own services that are unreachable and to make sure that families can access services and can actively engage with them staffs must work in different ways. Children's centres that explicitly address issues of poverty and social division can increase social support, friendships and inclusiveness, hence its need in a society.

1.2. STATEMENT OF PROBLEM

The absence of a designed functional children's edutainment centre; the makeshift facilities are devoid of functional integration and organization.

1.3. AIM AND OBJECTIVES

1.3.1. AIM

To develop the design of a social, entertaining and educational facility that will provide a soothing learning experience to children through play and exhibits.

1.3.2. OBJECTIVES

The researcher anticipates achieving his aim by:

- Designing 'through the eye of the child,' with a resulting sensitivity to children's scale, including how they will use the space, what they will see, and what kind of experience they will have.
- Establishing a distinctively children-oriented environment within a stately-controlled facility. The impression created by the design would be the antithesis of a typical institutional setting. In other words, the centre should 'feel like home' for the children.
- Creating an accessible centre for the disabled, staff, parents and children in a cost effective manner.
- Providing a healthful indoor and outdoor environment.
- Creating a viable and feasible place for acquiring knowledge through entertainment.
- Creating an easy access to information using modern forms of edutainment such as television, videos, the internet etc.

1.4. SIGNIFICANCE OF THE STUDY

The beneficiaries of this research study include the children, parents, government, the society, individuals and future researchers, which would not only foster children's development, but promote social and educational values. It will add to the ostentatious vista of our city, as well as encourage economic growth and tourism.

1.5. SCOPE OF THE STUDY

This research work, as it is conceived is meant to cater for the day to day activities of children between the ages of 2 to 12 years, staffs and people collecting their children from the centre. Therefore, the scope of this dissertation would be centred on the following spaces to be provided:

- **Administrative spaces:** Manager's offices, general offices, curator office.
- **Meeting spaces:** Conference room, multipurpose hall for birthdays and other events.
- **Learning spaces:** Computer training units, classrooms, children's library, temporary and permanent exhibition, Film, audiovisual room, galleries
- **Recreational spaces:** Restaurant, Children's indoor-outdoor playground, outdoor playgrounds, indoor and outdoor recreation.
- **Ancillary spaces:** Children's boutique, storage spaces, circulation spaces, conveniences etc.

1.6. RESEARCH QUESTIONS

- Who are these children and what age group is the centre meant for?
- How can a children oriented environment be created to provide a home-like feeling for children?
- What measures could be implemented to expand children's mind through play and exhibits?
- What elements or symbols appealing to children can be integrated in evolving the building form and massing?
- How can edutainment be sustained in order to make it an efficient and effective tool for expanding the mind of the children.
- What roles does architecture play in the overall design of the building and site?

1.7. RESEARCH METHODOLOGY

Survey research approach will be adopted for the purpose of this dissertation, and longitudinal survey design/research, which is one of the three types of survey research, will be specifically used. Longitudinal survey design/research collects information on certain variables in a study population at more than one point in time.

Both primary and secondary source of data collection will be implemented. This approach is aimed at exploring and investigating specific areas of phenomena in order to gain more insight into the particular problem under investigation and solutions to posing problems.

Primary data includes obtain information from direct sources such as:

- Direct interviews and enquiries from people.
- Author's fore-knowledge on related noted matters on the current study

- Carrying out site visits and studies; investigations and direct observation on the proposed project site by the author.
- Taking photographs of such visited existing facilities and producing diagrams for illustrative purposes of such.

Secondary data or information method of collection is employed from sources not directly from the author such as:-

- Use of existing literature from textbooks, publications, magazines, and unpublished materials.
- Use of the internet for further information and data collection.
- Internationally recognized and accepted research encyclopedia
- Policy statement.

Information gathered would help the researcher introduce modern techniques in the design of a standard children centre that will stand the test of all necessary and existing requirements.

1.8. LIMITATION OF THE STUDY

The researcher was faced with the problem of doing a detailed study, as information were not been released, vital documents were proved to be difficult in accessing, lack of cooperation from study sites on the basis of principle and lack of adequate finance due to economic crisis within the country as at the time of the study.

1.9.0. THE STUDY AREA

1.9.1. LOCATION:

Awka, the capital of Anambra state of Nigeria is situated 72 kilometers south-west of Enugu, the capital of Enugu state. The city is located about 600 miles east of Lagos in the centre of the densely-populated Igbo heartland in southeastern Nigeria. The West-East Federal highway links Lagos, Benin City, Asaba, Onitsha, and Enugu to Awka. (Wikipedia, the free encyclopedia)

It is also located about 35 kilometres north-east of Onitsha, the commercial nerve centre of south-eastern Nigeria. Awka is roughly enclosed by longitudes 7 1'4" and 7 8'4"east, and latitudes 6 10'4"and 6 15"north. The town is bounded on the north by Amansea, on the west by Okpuno, on the east by Isiagu, on the south-east by Nibo, and on the south by Nawfia. It is

on an elevation of about 153.9 metres(513 feet) above the sea-level. It covers an area of approximately 25 square kilometers (Association of Awka Indigenous Advocates Inc).

1.9.2. HISTORICAL BACKGROUND OF AWKA

Awka was famous for metal working and its blacksmiths before the 20th century and were prized throughout the region for making farming implements, guns and tools. The Awka area in earlier times was the site of the Nri Civilization that produced the earliest documented bronze works in Sub-Saharan Africa around 800 AD.

Before the inception of British rule, Awka was governed by titled men known as Ozo and Ndichie who were accomplished individuals in the community. They held general meetings or Izu Awka either at the residence of the oldest man (Otochal Awka) or at a place designated by him. He was the Nne Uzu or master blacksmith, whether he knew the trade or not, for the only master known to Awka people was the master craftsman, the Nne Uzu. However, Awka still preserves traditional systems of governance with Ozo titled men often consulted for village and community issues and a paramount cultural ruler, the Eze Uzu who is elected by all Ozo titled men by rotation amongst different villages to represent the city at state functions. The current Eze Uzu of the city is Gibson Nwosu.

Awka should not be confused with Awka Etiti which is a town in Idemili South local government area that is often mistaken for the main capital. Today it is the capital of Anambra State of Nigeria. Slogan: Sires of Smiths (Association of Awka Indigenous Advocates Inc).

1.9.3. DEMOGRAPHICS

Awka with an estimated population of 301,657 as of 2006 Nigerian census, comprises seven Igbo groups sharing common blood lineage divided into two sections. Ifite Section, the senior section, comprises four groups, Ayom-na-Okpala, Nkwelle, Achalla, and Ifite-Awka followed by Ezinator Section, which consists of three groups, Amikwo, Ezi-Awka and Agulu. Each of these groups has a number of villages". All together, Awka comprises 33 villages.

Awka people as in traditional times travel far and wide and have a large diasporas primarily in the UK and in the USA . Living abroad, they formed themselves into social clubs like Awka Union USA and Canada, Awka town social community Uk and Ireland and other such

useful associations. These associations have been a way for people to enjoy their culture as well as to engage in community self-help projects. Over the years Awka Town has attracted people from other states in Nigeria and has a significant number of immigrants from northern Nigeria, Delta state, Cameroon and Ghana .

1.9.4. GEOGRAPHY

Awka lies below 300 metres above sea in a valley on the plains of the Mamu River. Two ridges or cuestas, both lying in a North-South direction, form the major topographical features of the area. The ridges reach the highest point at Agulu just outside the Capital Territory. About six kilometers east of this, the minor cuesta peaks about 150 metres above sea level at Ifite –Awka.

Awka is sited in a fertile tropical valley but most of the original Rain forest has been lost due to clearing for farming and human settlement. A few examples of the original rain forest remains at places like the Ime Oka shrine. Wooded savannah grassland predominates primarily to the north and east of the city. South of the town on the slopes of the Awka-Orlu Uplands are some examples o f soil erosion and gullying.

1.10.0. DEFINITION OF KEY TERMS

1.10.1. ARCHITECTURE

Architecture is the science and art of designing and construction of the environment to meet aesthetic and functional needs of man. It can be defined as the branch of science that deals with the design and modification of the environment to meet the users' need. Prof. Amaechi J.N. of the department of architecture Nnamdi Azikiwe University, Awka, defined it as "the organization of forms to accommodate functions for the goods of man."

1.10.2 EDUCATION

Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits.

1.10.3 EDUTAINMENT

Edutainment is a neologism (new term coinage), similar to infotainment , that expresses the marriage of education and entertainment in a work-like environment or presentation such as a

television program or a Web site. Simply put, edutainment is the presentation of informative or educational material in an entertaining style.

1.10.4 ENTERTAINMENT

Entertainment is a form of activity that holds the attention and interest of an audience, or gives pleasure and delight. It can be an idea or a task, but is more likely to be one of the activities or events that have developed over thousands of years specifically for the purpose of keeping an audience's attention. Although people's attention is held by different things, because individuals have different preferences in entertainment, most forms are recognizable and familiar. Storytelling, music, drama, dance, and different kinds of performance exist in all cultures, were supported in royal courts, developed into sophisticated forms and over time became available to all citizens.

1.10.5. EXHIBITION

An exhibition, in the most general sense, is an organized presentation and display of a selection of items. In practice, exhibitions usually occur within museums, galleries and exhibition halls, and World's fairs. Exhibitions can include many things such as art in major museums and smaller galleries, interpretive exhibitions, natural history museums and history museums, and also varieties such as more commercially focused exhibitions and trade.

CHAPTER TWO

2.0. LITERATURE REVIEW, THEORETICAL FRAMEWORK AND CASE STUDIES

This chapter contains the review of relevant literatures, the theoretical framework of the research and critical study of existing architectural projects which play an important role in the architect's final design as it helps the designer to foresee the existing problems and subsequently enable him create more effective design solution for the project.

2.1.0. EDUTAINMENT

Educational entertainment (also referred to by the portmanteau neologism edutainment) is content designed to educate and to entertain. It includes content that is primarily educational but has incidental entertainment value, and content that is mostly entertaining but contains educational value. It has been used by governments in various countries to disseminate information via television, including soap operas or telenovelas to influence viewers' opinions and behaviors.

2.1.1. ORIGIN OF EDUTAINMENT

The noun **edutainment** is a neologistic portmanteau first "invented" by Dr. Chris Daniels in 1975, to encapsulate the theme of his Millennium Project, which later became known as The Elysian World Project, which espoused the core philosophy, "*Education through Entertainment."* Later, this was adopted by others and in particular made popular by Bob Heyman while producing documentaries for the National Geographic Society. Edutainment is also used to refer to the use of small chunks of e-Learning used to deliver key messages in an entertaining manner. This can be used to treat such issues as ethics, diversity and compliance. According to other sources, Peter Catalanotto first coined this phrase in the late 1990s, as he traveled around the country 'edutaining' school children about writing and illustrating. Prior to this period, "Edutainment" was the title of hip-hop group Boogie Down Productions' fourth album which was released in 1990, which predates Catalanotto's popularization of the word. It is also the name of a popular radio show in Knoxville TN, The Edutainment Hip Hop Show.

Since the 1970s, various groups in the United States, the United Kingdom, and Latin America have used edutainment to address such health and social issues as substance

abuse, immunization, teenage, HIV/AIDS, and cancer. Initiatives in major universities, such as, Johns Hopkins University and the University of Wisconsin-Madison, NGOs such as PCI-Media Impact, and government agencies such as the U.S. Centers for Disease Control (CDC) have produced edutainment content. Modern forms of edutainment include television productions, film, museum exhibits, and computer software which use entertainment to attract and maintain an audience, while incorporating deliberate educational content or messages.

2.1.2. TERMINOLOGY

The term edutainment was used as early as 1948 by The Walt Disney Company to describe the True Life Adventures series. The noun edutainment is a neologistic portmanteau used by Robert Heyman in 1973 while producing documentaries for the National Geographic Society (Marta Rey-López et al, 2006). It was also used by Dr. Chris Daniels in 1975 to encapsulate the theme of his Millennium Project. This project later became known as The Elysian World Project (Elysian World, 2014). The offshoot word "Edutainer" has been used by Craig Sim Webb since before the turn of the millennium to describe an individual who offers edutainment presentations and performances.

2.1.3. EDUTAINMENT BY THE MEDIA

Audio and Video

Schoolhouse Rock, Wishbone, Sesame Street, and Bill Nye the Science Guy are examples of shows that use music and video to teach topics like math, science, and history. Using music to aid memory dates back to the passing of ancient oral traditions, including the Iliad and the Odyssey. Much of what edutainment can offer through audio and video especially, is accessible over the internet on platforms such as YouTube.

Film and Television

Motion pictures with educational content appeared as early as 1943, such as Private Snafu, and can still be seen in films such as An Inconvenient Truth. After World War II, educational entertainment shifted towards television. Television programs can be divided into three main categories: those with primarily educational intentions, those with a high degree of both education and entertainment, and entertainment shows with incidental or occasional educational value. Mexican TV producer Miguel Sabido pioneered in the 1970s a form of

edutainment via telenovelas, "soap operas for social change." The "Sabido method" has been adopted in many other countries subsequently, including India, Peru, Kenya, and China. In Mexico, the government in the 1970s successfully used a telenovela to promote family planning to curb the country's high birthrate. (Gabriela Soto Laveaga, 2007)

Educational Game

Games fulfill a number of educational purposes. Some games may be explicitly designed with education in mind, while others may have incidental or secondary educational value. All types of games, including board, card, and video games, may be used in an educational environment. Educational games are designed to teach people about certain subjects, expand concepts, reinforce development, understand an historical event or culture, or assist them in learning a skill as they play.

According to Paraskeva (2010), at least 68% of American households play video games. Many recent research articles postulate education and gaming can be joined to provide academic benefits. According to Van Eck (2006), there are three reasons why games are considered learning tools:

1. Ongoing research that has included the last 20 years of educational findings has proven that digital games can be educational; **2.** The new generation of today wants multiple streams of information which includes quick and frequent interaction that allows inductive reasoning; and **3.** The mere popularity of games has created a billion-dollar industry. The idea of playing a game assumes the person is engaging in that activity by choice. The activity should have some value of "fun". This does not mean that the person is engaging in the activity only for leisure pursuits; it can also include the desire to learn a skill, connect with other gamers (social community), and spend time in a chosen activity. The activity needs to remain one of choice for the gamer (Van Eck, R., 2006). Kim (2008) supports the use of off-the-shelf games with meta-cognitive strategies to provide an increase in students' cognitive performance (Kim, B., Park, H., & Baek, Y., 2009)

Radio

Radio can serve as an effective vehicle for educational entertainment. The British radio soap opera The Archers has for decades been systematically educating its audience on agricultural matters; likewise, the Tanzanian radio soap opera Twende na Wakati ("Let's Go With the Times") was written primarily to promote family planning. Khirki Mehendiwali - In an

endeavour to improve maternal and child health practices in Bihar, a 37 episode long Radio Show Khirki Mehendiwali was created for the rural audience by BBC Media Action, India. Each approximately 15-minute episode beautifully blends information with entertainment to disseminate one specific message on maternal and child health. The show provides a window to the world to its rural listeners by not only giving them a glimpse of the world outside but also unlocking voices, feelings, dreams and information, which they had hitherto not heard or experienced.

Educational Toys

Toys are perhaps the earliest "edutainment" objects a person encounters, as many toys have also an educational aspect beside their aesthetic appeal. They can teach children literacy, numerical, conceptual or motor skills. Many toys (e.g., a miniature piano) are simply colorful, scaled-down versions of more complex objects, and thus can base children in skills and benefits associated with the latter. It is up to grown-ups to guide children to the toy's proper use in order to make the most out of it. Toys are often employed in the context of mimicry and role play to partially experience personalities or situations not otherwise possible, very akin to simulation in video games. They can be used as primitive means to nurture an instinct or a character trait in children. Often, toys work simultaneously the other way, providing children with the means to express those things: a doll may be used by a girl to mimic her mother or express motherhood as much as to explore it.

Even for toys that don't possess explicit educational value, a thoughtful parent or teacher can turn a static figurine, for example, into an object of interest, by pointing out its features or costumes, or referring to its history or science which can be done in conjunction with a more-explicitly "edutaining" object, such as a picture book. Most children are naturally inquisitive (possibly why they sometimes break their toys; simply to know what is inside or how it moves or what produces that sound), and caregivers should not waste this opportunity. Even grown-ups can learn through toys about children: what are their talents or interests; if they are more extrovert or introvert; indeed if they dislike toys and prefer social activities or sport, and thus capitalize on the children's abilities and correct what is wrong or lacking.

Some toys are of considerable appeal and benefit to both children and adults, such as Lego or Rubik's Cube, as their design and implementation can range from the simple to the sophisticated.

Plate 2.0: Lego bricks: Encourage learning through play. | ***Source**: Alan Chia* CC BY-SA 2.0

By Setting Outside of the Classroom (Entertainment in Education)

The concept of educational entertainment is being used for building learning programs for organizations. High technology is used to make the programs entertaining and educational. As an example, PowerPoint presentations may become more entertaining with the addition of flashy animations or graphics.

Museums and Public Access Areas

Edutainment is also a growing paradigm within the science center and children's museum community in Nigeria as well as many other locations such as the zoo or a botanical garden. This approach emphasizes fun and enjoyment, sometimes at the expense of educational content, yet can give those learning a clearer idea of what they are learning. Educational locations such as these are constantly looking for new and innovative ways to reach the surrounding public and get them interested in areas such as the fine arts, science, literature, history, etc. Field trip visits to these educational places provide interactional stimulus to those involved to learn about what is in these places. However, people are used to flashy, polished entertainment venues like movie theaters and theme parks and demand similar experiences at science centers or museums. Thus, a museum or a zoo can be seen as

just another business competing for entertainment dollars from the public, rather than as an institution that serves the public welfare through education or historical preservation (Stoll, Clifford, 1999).

2.2.0. ENTERTAINMENT

Entertainment is a form of activity that holds the attention and interest of an audience, or gives pleasure and delight. It can be an idea or a task, but is more likely to be one of the activities or events that have developed over thousands of years specifically for the purpose of keeping an audience's attention. Although people's attention is held by different things, because individuals have different preferences in entertainment, most forms are recognisable and familiar. Storytelling, music, drama, dance, and different kinds of performance exist in all cultures, were supported in royal courts, developed into sophisticated forms and over time became available to all citizens. The process has been accelerated in modern times by an entertainment industry which records and sells entertainment products. Entertainment evolves and can be adapted to suit any scale, ranging from an individual who chooses a private entertainment from a now enormous array of pre-recorded products; to a banquetadapted for two; to any size or type of party, with appropriate music and dance; to performances intended for thousands; and even for a global audience. The experience of being entertained has come to be strongly associated with amusement, so that one common understanding of the idea is funand laughter, although many entertainments have a serious purpose. This may be the case in the various forms of ceremony, celebration,religious festival, or satire for example. Hence, there is the possibility that what appears as entertainment may also be a means of achievinginsight or intellectual growth.

An important aspect of entertainment is the audience, which turns a private recreation or leisure activity into entertainment. The audience may have a passive role, as in the case of persons watching a play, opera, television show, or film; or the audience role may be active, as in the case of games, where the participant/audience roles may be routinely reversed. Entertainment can be public or private, involving formal, scripted performance, as in the case of theatre or concerts; or unscripted and spontaneous, as in the case of children's games. Most forms of entertainment have persisted over many centuries, evolving due to changes in culture, technology, and fashion. Films and video games, for example, although they use newer media, continue to tell stories, present drama, and play

music. Festivals devoted to music, film, or dance allow audiences to be entertained over a number of consecutive days.

Some activities that once were considered entertaining, particularly public punishments, have been removed from the public arena. Others, such as fencing or archery, once necessary skills for some, have become serious sports and even professions for the participants, at the same time developing into entertainment with wider appeal for bigger audiences. In the same way, other necessary skills, such as cooking, have developed into performances among professionals, staged as global competitions and then broadcast for entertainment. What is entertainment for one group or individual may be regarded as work by another.

The familiar forms of entertainment have the capacity to cross over different media and have demonstrated a seemingly unlimited potential for creative remix. This has ensured the continuity and longevity of many themes, images, and structures.

2.2.1. HISTORY OF ENTERTAINMENT

The "ancient craft of communicating events and experiences, using words, images, sounds and gestures" by telling a story is not only the means by which people passed on their cultural values and traditions and history from one generation to another, it has been an important part of most forms of entertainment ever since the earliest times (Gakhar, Sonia 2007).

Stories are still told in the early forms, for example, around a fire while camping, or when listening to the stories of another culture as a tourist. "The earliest storytelling sequences we possess, now of course, committed to writing, were undoubtedly originally a speaking from mouth to ear and their force as entertainment derived from the very same elements we today enjoy in films and novels. Storytelling is an activity that has evolved and developed "toward variety" according to Kuhns, Richard Francis (2005) in Decameron and the Philosophy of Storytelling: Author as Midwife and Pimp.

Many entertainments, including storytelling but especially music and drama, remain familiar but have developed into a wide variety of form to suit a very wide range of personal preferences and cultural expression. Many types are blended or supported by other forms. For example, drama, stories and banqueting (or dining) are commonly enhanced by music; sport and games are incorporated into other activities to increase appeal. Some may have evolved from serious or necessary activities (such as running and jumping) into competition and then become entertainment. It is said, for example, that pole vaulting "may have originated in the

Netherlands, where people used long poles to vault over wide canals rather than wear out their clogs walking miles to the nearest bridge. Others maintain that pole vaulting was used in warfare to vault over fortress walls during battle." The equipment for such sports has become increasingly sophisticated. Vaulting poles, for example, were originally made from woods such as ash, hickory or hazel; in the 19th century bamboo was used and in the 21st century poles can be made of carbon fibre. Other activities, such as walking on stilts, are still seen in circus performances in the 21st century. Gladiatorial combats, also known as "gladiatorial games", popular during Roman times, provide a good example of an activity that is a combination of sport, punishment, and entertainment.

Changes to what is regarded as entertainment can occur in response to cultural or historical shifts. Hunting wild animals, for example, was introduced into the Roman Empire from Carthage and became a popular public entertainment and spectacle, supporting an international trade in wild animals. Entertainment also evolved into different forms and expressions as a result of social upheavals such as wars and revolutions. During the Chinese Cultural Revolution, for example, Revolutionary opera was sanctioned by the Communist party and World War I, the Great Depression and the Russian revolution all had an impact on entertainment (Roshwald, Aviel; Stites, Richard 2002).

Relatively minor changes to the form and venue of an entertainment continue to come and go as they are affected by the period, fashion, culture, technology, and economics. For example, a story told in dramatic form can be presented in an open-air theatre, a music hall, a movie theatre, a multiplex, or as technological possibilities advanced, via a personal electronic device such as a tablet computer. Entertainment is provided for mass audiences in purpose-built structures such as a theatre, auditorium, or stadium. One of the most famous venues in the Western world, the Colosseum, "dedicated AD 80 with a hundred days of games, held fifty thousand spectators," and in it audiences "enjoyed "blood sport with the trappings of stage shows" (McDonald Watson, 2007). Spectacles, competitions, races, and sports were once presented in this purpose-built arena as public entertainment. New stadia continue to be built to suit the ever more sophisticated requirements of global audiences.

2.2.2. FORMS OF ENTERTAINMENT

The various forms of entertainment includes the following: Banquets, Music, Games, Reading, Comedy and Performance. Performance as a form of entertainment has the

following under it: Storytelling, Theatre, Cinema and film, Dance, Animals, Circus, Magic, Street performance, Parades, Fireworks, Sport, Fairs, expositions, shopping etc.

2.2.3. CHILDREN'S ENTERTAINMENT

Children's entertainment is centred on play and is significant for their growth and learning. Entertainment is also provided to children or taught to them by adults and many activities that appeal to them such as puppets, clowns, pantomimes and cartoons are also enjoyed by adults (O'Brien, John, 2004).

Children have always played games. It is accepted that as well as being entertaining, playing games helps children's development. One of the most famous visual accounts of children's games is a painting by Pieter Bruegel the Elder called Children's Games, painted in 1560. It depicts children playing a range of games which were presumably typical of the time. Many of these games, such as marbles, hide-and-seek, blowing soap bubbles and piggyback riding continue to be played.

Most forms of entertainment can be or are modified to suit children's needs and interests. During the 20th century, starting with the often criticised but nonetheless important work of G. Stanley Hall, who "promoted the link between the study of development and the 'new' laboratory psychology" (Thompson, Dennis; Hogan, John D.; Clark, Philip M., 2012*)* and especially with the work of Jean Piaget, who "saw cognitive development as being analogous to biological development", it became understood that the psychological development of children occurs in stages and that their capacities differ from adults. Hence, stories and activities, whether in books, film, or video games were developed specifically for child audiences. Countries have responded to the special needs of children and the rise of digital entertainment by developing systems such as television content rating systems, to guide the public and the entertainment industry. In the 21st century, as with adult products, much entertainment is available for children on the internet for private use. This constitutes a significant change from earlier times. The amount of time expended by children indoors on screen-based entertainment and the "remarkable collapse of children's engagement with nature" has drawn criticism for its negative effects on imagination, adult cognition and psychological well-being (Cobb, Edith, 1977).

2.2.4. ARCHITECTURE FOR ENTERTAINMENT

Purpose-built structures as venues for entertainment that accommodate audiences have produced many famous and innovative buildings, among the most recognizable of which are theatre structures. For the ancient Greeks, "the architectural importance of the theatre is a reflection of their importance to the community, made apparent in their monumentality, in the effort put into their design, and in the care put into their detail." (Green J.R., 2002). The Romans subsequently developed the stadium in an oval form known as a circus. In modern times, some of the grandest buildings for entertainment have brought fame to their cities as well as their designers.

Plate 2.2: Colosseum (70–80 AD) Rome, Italy; Roman venue for mass entertainment ***Source:*** *DAVID ILIFF. License: CC-BY-SA 3.0*

Plate 2.3: The Grand Foyer in the Palais Garnier, Paris (1875), influenced architecture around the world. ***Source:*** *(Rainer Zenz 12*

Plate 2.4: Maracanã, Rio de Janeiro, at inauguration (1950) the world's largest stadium by capacity

Plate 2.5: The O_2 entertainment precinct (2007) London ***Source:*** *Thomas Nuggent www.geograph.org.uk/photo/2640178*

The Sydney Opera House, for example, is a World Heritage Site and The O_2 in London is an entertainment precinct that contains an indoor arena, a music club, a cinema and exhibition space. The Bayreuth Festspielhaus in Germany is a theatre designed and built for performances of one specific musical composition. Two of the chief architectural concerns for the design of venues for mass audiences are speed of egress and safety. The speed at which the venue can be emptied is important both for amenity and safety because large crowds take a very long time to disperse from a badly designed venue and this in turn creates a safety risk. The Hillsborough disaster is an example of how poor aspects of building design can contribute to audience deaths. Sightlines and acoustics are also important design considerations in most theatrical venues.

In the 21st century, entertainment venues, especially stadia, are "likely to figure among the leading architectural genres" (Sheard, Rod, 2001). However, they require "a whole new approach" to design, because they need to be "sophisticated entertainment centres, multi-experience venues, capable of being enjoyed in many diverse ways" (Sheard, 2001). Hence, architects now have to design "with two distinct functions in mind, as sports and entertainment centres playing host to live audiences, and as sports and entertainment studios serving the viewing and listening requirements of the remote audience" (Sheard, 2001).

2.2.5. ARCHITECTURE AS ENTERTAINMENT

Architects who push the boundaries of design or construction sometimes create buildings that are entertaining because they exceed the expectations of the public and the client and are aesthetically outstanding (Lasanky, Medina, 2004). Buildings such as Guggenheim Museum Bilbao, designed by Frank Gehry, are of this type, becoming a tourist attraction as well as a significant international museum. Other apparently usable buildings are really follies, deliberately constructed for a decorative purpose and never intended to be practical.

On the other hand, sometimes architecture is entertainment, while pretending to be functional. The tourism industry, for example, creates or renovates buildings as "attractions" that have either never been used or can never be used for their ostensible purpose. They are instead re-purposed to entertain visitors often by simulating cultural experiences. Buildings, history and sacred spaces are thus made into commodities for purchase. Such intentional tourist attractions divorce buildings from the past so that "the difference between historical

authenticity and contemporary entertainment venues/theme parks becomes hard to define" (Lasanky, Medina 2004).

Plate 2.6: Guggenheim Museum Bilbao, designed by Frank Gehry | **Source**: *Google image suggestskyworld.net (2016)*

Examples include "the preservation of the Alcázar of Toledo, with its grim Civil War History, the conversion of slave dungeons into tourist attractions in Ghana, [such as, for example, Cape Coast Castle] and the presentation of indigenous culture in Libya." (Lasanky 2004 p. xvii). The specially constructed buildings in amusement parks represent the park's theme and are usually neither authentic nor completely functional

2.3.0. EXHIBITION CENTRE

An exhibition, in the most general sense, is an organized presentation and display of a selection of items. In practice, exhibitions usually occur within museums, galleries and exhibition halls, and World's fairs. Exhibitions can include many things such as art in major museums and smaller galleries, interpretive exhibitions, natural history museums and history museums, and also varieties such as more commercially focused exhibitions and trade.

The word "exhibition" is usually, but not always, the word used for a collection of items. Sometimes "exhibit" is synonymous with "exhibition", but "exhibit" generally refers to a single item being exhibited within an exhibition. Exhibitions may be permanent displays or temporary, but in common usage, "exhibitions" are considered temporary and usually

scheduled to open and close on specific dates. While many exhibitions are shown in just one venue, some exhibitions are shown in multiple locations and are called travelling exhibitions, and some are online exhibitions.

Though exhibitions are common events, the concept of an exhibition is quite wide and encompasses many variables. Exhibitions range from an extraordinarily large event such as a World's fair exposition to small one-artist solo shows or a display of just one item. Curators are sometimes involved as the people who select the items in an exhibition. Writers and editors are sometimes needed to write text, labels and accompanying printed material such as catalogs and books. Architects, exhibition designers, graphic designers and other designers may be needed to shape the exhibition space and give form to the editorial content.

2.3.1. ART EXHIBITION

Art exhibitions include an array of artifacts from countless forms of human making: paintings, drawings, crafts, sculpture, video installations, sound installations, performances, interactive art, etc. Art exhibitions may focus on one artist, one group, one genre, one theme or one collection; or may be organized by curators, selected by juries, or show any artwork submitted. Fine arts exhibitions typically highlight works of art with generous space and lighting, supplying information through labels or audio guides designed to be unobtrusive to the art itself. Exhibitions may occur in series or periodically, as in the case with Biennales, triennials and quadrennials.

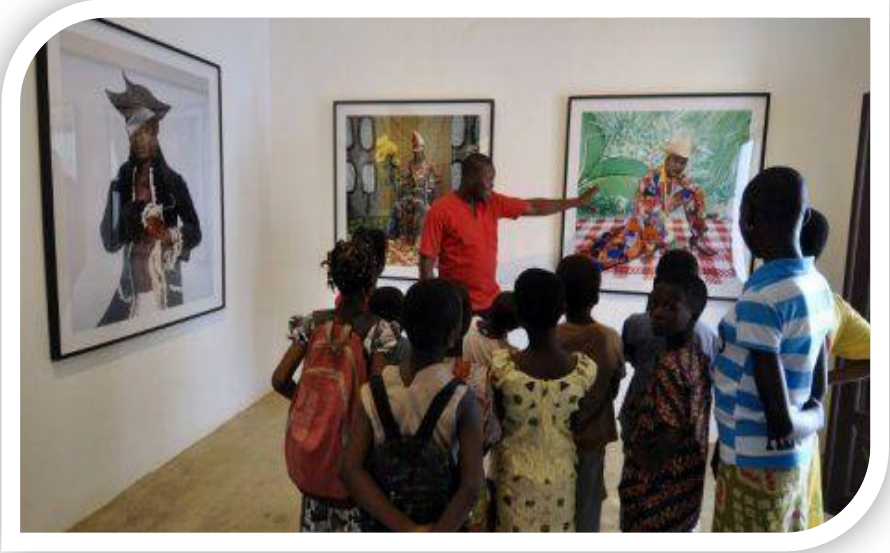

Plate 2.7: The Zinsou Museum-A guide shows children through an exhibition presenting a series of auto-portrait photos by Cameroonian and Nigerian artist Samuel Fosso.| ***Source:*** *©AFP*

2.3.2. INTERPRETIVE EXHIBITIONS

Interpretive exhibitions are exhibitions that require more context to explain the items being displayed. This is generally true of exhibitions devoted to scientific and historical themes, where text, dioramas,charts, maps and interactive displays may provide necessary explanation of background and concepts. Interpretive exhibitions generally require more text and more graphics than fine art exhibitions do. The topics of interpretive graphics cover a wide range including archaeology, anthropology, ethnology, history, science, technology and natural history.

2.3.3. COMMERCIAL EXHIBITIONS

Commercial exhibitions, generally called trade fairs, trade shows or expos, are usually organized so that organizations in a specific interest or industry can showcase and demonstrate their latest products, service, study activities of rivals and examine recent trends and opportunities. Some trade fairs are open to the public, while others can only be attended by company representatives (members of the trade) and members of the press.

2.3.4. ONLINE EXHIBITION

An online exhibition, also referred to as a virtual exhibition, online gallery, cyber-exhibition, is an exhibition whose venue is cyberspace. Museums and other organizations create online exhibitions for many reasons. For example, an online exhibition may: expand on material presented at, or generate interest in, or create a durable online record of, a physical exhibition; save production costs (insurance, shipping, installation); solve conservation/preservation problems (e.g., handling of fragile or rare objects); reach lots more people: "Access to information is no longer restricted to those who can afford travel and museum visits, but is available to anyone who has access to a computer with an Internet connection. Unlike physical exhibitions, online exhibitions are not restricted by time; they are not forced to open and close but may be available 24 hours a day.

In the nonprofit world, many museums, libraries, archives, universities, and other cultural organizations create online exhibitions. A database of such exhibitions is Library and Archival Exhibitions on the Web. Online exhibitions are also increasingly being utilized by businesses and individuals. Online exhibition organizers may use techniques such as marquee

text, display advertisements, and in-event emails to engage patrons. Various guides have been published to help organizations create effective online exhibitions.

The earliest museum with a physical existence to create a programme of substantial online exhibitions with high resolution images of artifacts was the Museum of the History of Science in Oxford, the first of which, The Measurers: a Flemish Image of Mathematics in the Sixteenth Century and an exhibition of early photographs, were published on 21 August 1995.

2.4.0. CHILD PSYCHOLOGY

Child Psychology, also called Child Development is the study of the psychological processes of children and, specifically, how these processes differ from those of adults, how they develop from birth to the end of adolescence, and how and why they differ from one child to the next. The topic is sometimes grouped with infancy, adulthood, and aging under the category of developmental psychology.

2.4.1. HISTORICAL ANTECEDENT

John B. Watson and Jean-Jacques Rousseau are typically cited as providing the foundations for modern developmental psychology. In the mid-18th century Jean Jacques Rousseau described three stages of development: infants (infancy), puer (childhood) and adolescence in Emile: Or, On Education. Rousseau's ideas were taken up strongly by educators at the time (Hogan, John D., n.d.).

In the late 19th century, psychologists familiar with the evolutionary theory of Darwin began seeking an evolutionary description of psychological development; prominent here was the pioneering psychologist G. Stanley Hall, who attempted to correlate ages of childhood with previous ages of mankind. James Mark Baldwin who wrote essays on topics that included Imitation: A Chapter in the Natural History of Consciousness and Mental Development in the Child and the Race: Methods and Processes. Baldwin was heavily involved in the theory of developmental psychology. Sigmund Freud, whose concepts were developmental, had a significant impact on public perceptions.

As a scientific discipline with a firm empirical basis, child study is of comparatively recent origin. It was initiated in 1840, when Darwin began a record of the growth and development

of one of his own children, collecting the data much as if he had been studying an unknown species. A similar, more elaborate study published by German psycho physiologist William Preyer put forth the methods for a series of others. In 1891 American educational psychologist G. Stanley Hall established the Pedagogical Seminary, a periodical devoted to child psychology and pedagogy. During the early 20th century, the development of intelligence tests and the establishment of child guidance clinics further defined the field of child psychology.

A number of notable 20th-century psychologists—among them Sigmund Freud, Melanie Klein, and Freud's daughter, Anna Freud—dealt with child development chiefly from the psychoanalytic point of view. Perhaps the greatest direct influence on modern child psychology was Jean Piaget of Switzerland. By means of direct observation and interaction, Piaget developed a theory of the acquisition of understanding in children. He described the various stages of learning in childhood and characterized children's perceptions of themselves and of the world at each stage of learning.

The data of child psychology are gathered from a variety of sources. Observations by relatives, teachers, and other adults, as well as the psychologist's direct observation of and interviews with a child (or children), provide much material. In some cases a one-way window or mirror is used so that children are free to interact with their environment or others without knowing that they are being watched. Personality tests, intelligence tests, and experimental methods have also proved useful in understanding child development. Despite attempts to unify various theories of child development, the field remains dynamic, changing as the fields of physiology and psychology develop.

2.4.2. DIFFERENT CONTEXTS OF CHILD PSYCHOLOGY:

People often think that only internal factors influence a child's growth like personal characteristics and genetics. But, development involves beyond that. Cultural scenario and social relationships also play key roles. Here are the major contexts that you have to consider in analyzing child psychology.

1. Social Context:

Associations with adults and peers have an effect on how your child thinks, perceives and develops. Family, school and student groups all make an important part in the social context.

2. Cultural Context:

This has to do with the culture in which the child lives and its set of customs, values, ideas and the way of living influences the development. Culture also plays a role about how children behave with their parent, the education they get and type of care.

3. Socio-economic Context:

Social class also plays a major role in child development. Socioeconomic status (SES) depends on various factors like education of the people, their economic status, their job and their area of living. Children who are raised in high SES will have greater reach to various opportunities, while children from lower SES will have less reach to things like nutrition, education and healthcare. These factors will have a greater impact on child psychology. If a child will have lesser opportunities due to a low socio-economic status and has a strong cultural influence and social relationships, it may help correct the imbalance.

2.4.3. LIFE STAGES OF PSYCHOLOGICAL DEVELOPMENT

Prenatal Development

Prenatal development is of interest to psychologists investigating the context of early psychological development. The whole prenatal development involves three main stages: germinal stage, embryonic stage and fetal stage. Germinal stage begins at conception until 2 weeks; embryonic stage means the development from 2 weeks to 8 weeks; fetal stage represents 9 weeks until birth of the baby. The senses develop in the womb itself: a fetus can both see and hear by the second trimester (13 to 24 weeks of age). Sense of touch develops in the embryonic stage (5 to 8 weeks). Most of the brain's billions of neurons also are developed by the second trimester. Babies are hence born with some odor, taste and sound preferences, largely related to the mother's environment (Laura E. Berk, 2012).

Some primitive reflexes too arise before birth and are still present in newborns. One hypothesis is that these reflexes are vestigial and have limited use in early human life. Piaget's theory of cognitive development suggested that some early reflexes are building blocks for infant sensor motor development. For example, the tonic neck reflex may help development by bringing objects into the infant's field of view. Other reflexes, such as the walking reflex appear to be replaced by more sophisticated voluntary control later in infancy. This may be because the infant gains too much weight after birth to be strong enough to use the reflex, or because the reflex and subsequent development are functionally different. It has also been suggested that some reflexes (for example the moro and walking

reflexes) are predominantly adaptations to life in the womb with little connection to early infant development. Primitive reflexes reappear in adults under certain conditions, such as neurological conditions like dementia or traumatic lesions (Butterworth, G.; Harris, M., 1994).

Ultrasound has shown that infants are capable of a range of movements in the womb, many of which appear to be more than simple reflexes. By the time they are born, infants can recognize and have a preference for their mother's voice suggesting some prenatal development of auditory perception. Prenatal development and birth complications may also be connected to neurodevelopment disorders, for example in schizophrenia. With the advent of cognitive neuroscience, embryology and the neuroscience of prenatal development is of increasing interest to developmental psychology research. Several environmental agents—teratogens—can cause damage during the prenatal period. These include prescription and nonprescription drugs, illegal drugs, tobacco, alcohol, environmental pollutants, infectious disease agents such as the rubella virus and the toxoplasmosis bacterium, maternal malnutrition, maternal emotional stress, and Rh factor blood incompatibility between mother and child (Laura E. Berk 2012).

Infancy

From birth until the first year, the child is referred to as an infant. Developmental psychologists vary widely in their assessment of infant psychology, and the influence the outside world has upon it, but certain aspects are relatively clear. The majority of a newborn infant's time is spent in sleep. At first this sleep is evenly spread throughout the day and night, but after a couple of months, infants generally become diurnal.

According to Laura E. Berk 2012, Infants can be seen to have six states, grouped into pairs:

- quiet sleep and active sleep (dreaming, when REM sleep occurs)
- quiet waking, and active waking
- fussing and crying

Infant Perception

Infant perception is what a newborn can see, hear, smell, taste, and touch. These five features are better known as one's "five senses" (Bremner, J.G., 1994). Infants respond to stimuli differently in these different states:

- **Vision** is significantly worse in infants than in older children. Infant sight tends to be blurry in early stages but improves over time. Color perception similar to that seen in adults has been demonstrated in infants as young as four months, using habituation methods. Infants get to adult-like vision in about six months (Butterworth, G.; Harris, M.,1994).

- **Hearing** is well-developed prior to birth, unlike vision. Newborns prefer complex sounds to pure tones, human speech to other sounds, mother's voice to other voices, and the native language to other languages. Scientist believes these features are probably learned in the womb. Infants are fairly good at detecting the direction a sound comes from, and by 18 months their hearing ability is approximately equal to an adult's (Laura E. Berk 2012).

- **Smell and taste** are present, with infants showing different expressions of disgust or pleasure when presented with pleasant odors (honey, milk, etc.) or unpleasant odors (rotten egg) and tastes (e.g. sour taste). Newborns are born with odor and taste preferences acquired in the womb from the smell and taste of amniotic fluid, in turn influenced by what the mother eats. Both breast- and bottle-fed babies around 3 days old prefer the smell of human milk to that of formula, indicating an innate preference. There is good evidence for older infants preferring the smell of their mother to that of others (Butterworth, G.; Harris, M.,1994)

- **Touch and feel** is one of the better-developed senses at birth considering it's one of the first senses to develop inside the womb. This is evidenced by the primitive reflexes described above, and the relatively advanced development of the somato sensory cortex (Slater, A.; Lewis, M., 2006).

- **Pain:** Infants feel pain similarly, if not more strongly than older children but pain-relief in infants has not received so much attention as an area of research. Glucose is known to relieve pain in newborns (Dilen, Ben; Elseviers, Monique, 2010).

Language Development

Babies are born with the ability to discriminate virtually all sounds of all human languages. Infants of around six months can differentiate between phonemes in their own language, but not between similar phonemes in another language. At this stage infants also start to babble, producing phonemes.

Infant Cognition: The Piagetian Era

An early theory of infant development was the sensorimotor stage of Piaget's theory of cognitive development. Piaget suggested that an infant's perception and understanding of the world depended on their motor development, which was required for the infant to link visual, tactile and motor representations of objects. According to this view, it is through touching and handling objects that infants develop object permanence, the understanding that objects are solid, permanent, and continue to exist when out of sight (Bremner, J.G.,1994).

Special methods are used in the psychological study of infants. Piaget's sensorimotor stage comprised six sub-stages. In the early stages, development arises out of movements caused by primitive reflexes. Discovery of new behaviors results from classical and operant conditioning, and the formation of habits. From eight months the infant is able to uncover a hidden object but will persevere when the object is moved. Piaget came to his conclusion that infants lacked a complete understanding of object permanence before 18 months after observing infants' failure before this age to look for an object where it was last seen. Instead infants continue to look for an object where it was first seen, committing the "A-not-B error" (Piaget, J., 1977).

Recent Findings in Infant Cognition

In the 1980s and 1990s, researchers have developed many new methods of assessing infants' understanding of the world with far more precision and subtlety than Piaget was able to do in his time. Since then, many studies based on these methods suggest that young infants understand far more about the world than first thought. Based on recent findings, some researchers (such as Elizabeth Spelke and Renee Baillargeon) have proposed that an understanding of object permanence is not learned at all, but rather comprises part of the innate cognitive capacities of our species.

Other research has suggested that young infants in their first six months of life may possess an understanding of numerous aspects of the world around them, including:

- An early numerical cognition, that is, an ability to represent number and even compute the outcomes of addition and subtraction operations;
- An ability to infer the goals of people in their environment;
- An ability to engage in simple causal reasoning (Leslie, A.; Keeble, S., 1987).

Critical Periods of Development

There are critical periods in infancy and childhood during which development of certain perceptual, sensorimotor, social and language systems depends crucially on environmental stimulation. Feral children such as Genie, deprived of adequate stimulation, fail to acquire important skills and are unable to learn in later childhood. The concept of critical periods is also well-established in neurophysiology, from the work of Hubel and Wiesel among others.

Toddlerhood

Infants shift between ages of one and two to a developmental stage known as toddlerhood. In this stage, an infant's transition into toddlerhood is highlighted through self-awareness, developing maturity in language use, and presence of memory and imagination.

During toddlerhood, babies begin learning how to walk, talk, and make decisions for themselves. An important characteristic of this age period is the development of language, where children are learning how to communicate and express their emotions and desires through the use of vocal sounds, babbling, and eventually words (Upton, P., 2011). Self-control also begins to develop. At this age, children take initiative to explore, experiment, and learn from making mistakes. Caretakers, who encourage toddlers to try new things and test their limits, help the child become autonomous, self-reliant, and confident. If the caretaker is overprotective or disapproving of independent actions, the toddler may begin to doubt their abilities and feel ashamed of the desire for independence. The child's autonomic development is inhibited, leaving them less prepared to deal with the world in the future. Toddlers also begin to identify themselves in gender roles, acting according to their perception of what a man or woman should do.

Socially, the period of toddlerhood is commonly called the "terrible twos" according to Newman, Barbara M.; Newman, P. R. (2011). Toddlers often use their new-found language abilities to voice their desires, but are often misunderstood by parents due to their language skills just beginning to develop. A person at this stage testing their independence is another reason behind the stage's infamous label. Tantrums in a fit of frustration are also common.

Childhood

In his book, The Psychology of Personality, Bernardo J. Carducci, opined that Erik Erikson divides childhood into four stages, each with its distinct social crisis:

- **Stage 1: Infancy (0 to 1½)** in which the psychosocial crisis is Trust vs. Mistrust
- **Stage 2: Early childhood (2½ to 3)** in which the psychosocial crisis is Autonomy vs. Shame and doubt
- **Stage 3: Play age (3 to 5)** in which the psychosocial crisis is Initiative vs. Guilt. (This stage is also called the "pre-school age," "exploratory age" and "toy age."
- **Stage 4: School age (5 to 12)** in which the psychosocial crisis is Industry vs. Inferiority Play (or preschool) ages 3–5.

In the earliest years, children are "completely dependent on the care of others." Therefore, they develop a "social relationship" with their care givers and, later, with family members. During their preschool years (3-5), they "enlarge their social horizons" to include people outside the family says Arland Thornton in the book "The Well-being of Children and Families." Preoperational and then operational thinking develops, which means actions are reversible, and egocentric thought diminishes. The motor skills of preschoolers increase so they can do more things for themselves. They become more independent. No longer completely dependent on the care of others, the world of this age group expands. More people have a role in shaping their individual personalities. Preschoolers explore and question their world. For Jean Piaget, the child is "a little scientist exploring and reflecting on these explorations to increase competence" and this is done in "a very independent way" (Piaget, J., 1977).

Play is a major activity for ages 3–5. For Piaget, through play "a child reaches higher levels of cognitive development" says Ann Marie Halpenny. In their expanded world, children in the 3-5 age group attempt to find their own way. If this is done in a socially acceptable way, the child develops initiative. If not, the child develops guilt. Children who develop "guilt" rather than "initiative" have failed Erikson's psychosocial crisis for the 3-5 age group.

Middle Childhood Ages 6–12.

For Erik Erikson, the psychosocial crisis during middle childhood is Industry vs. Inferiority which, if successfully met, instills a sense of Competency in the child. In all cultures, middle childhood is a time for developing "skills that will be needed in their society" in the words of Barbara Engler.

Middle Childhood is divided into two stages, 6–8 years and 9–11 years. Their developmental milestones for each stage are given respectively:

- **Middle Childhood (6-8).**
  Entering elementary school, children in this age group begin to thinks about the future and their "place in the world." Working with other students and wanting their friendship and acceptance become more important. This leads to "more independence from parents and family." As students, they develop the mental and verbal skills "to describe experiences and talk about thoughts and feelings". They become less self-centered and show "more concern for others".

- **Middle Childhood (9-11).**
  For children ages 9–11 friendships and peer relationships increase in strength, complexity, and importance. This results in greater peer pressure. They grow even less dependent on their families and they are challenged academically. To meet this challenge, they increase their attention span and learn to see other points of view.

Adolescence

Adolescence is the period of life between the onset of puberty and the full commitment to an adult social role, such as worker, parent, and/or citizen. It is the period known for the formation of personal and social identity and the discovery of moral purpose. Intelligence is demonstrated through the logical use of symbols related to abstract concepts and formal reasoning. A return to egocentric thought often occurs early in the period. Only 35% develop the capacity to reason formally during adolescence or adulthood (Huitt, W. and Hummel, J. J., 1998).

It is divided into three parts, namely:

- Early Adolescence: 9 to 13 years (preteen),
- Mid Adolescence: 13 to 15 years and
- Late Adolescence: 15 to 18 years

The adolescent unconsciously explores questions such as "Who am I? Who do I want to be?" Like toddlers, adolescents must explore, test limits, become autonomous, and commit to an identity, or sense of self. Different roles, behaviors and ideologies must be tried out to

select an identity. Role confusion and inability to choose vocation can result from a failure to achieve a sense of identity through, for example, friends.

Early Adulthood

Early adulthood, according to theorists such as Erik Erikson, is a stage where development is mainly focused on maintaining relationships. Examples include creating bond of intimacy, sustaining friendships, and ultimately making a family. Some theorists state that development of intimacy skills rely on the resolution of previous developmental stages. A sense of identity gained in the previous stages is also necessary for intimacy to develop. If this skill is not learned the alternative is alienation, isolation, a fear of commitment, and the inability to depend on others.

A related framework for studying this part of the life span is that of emerging adulthood. Scholars of emerging adulthood, such as Jeffrey Arnett, are not necessarily interested in relationship development. Instead, this concept suggests that people transition after their teenage years into a period not characterized as relationship building and an overall sense of constancy with life, but with years of living with parents, phases of self-discovery, and experimentation (Twenge, J.,2008).

Middle Adulthood or Middle Age

Middle adulthood generally refers to the period between ages 25 to 69. During this period, middle-aged adults experience a conflict between generativity and stagnation. They may either feel a sense of contributing to society, the next generation or their immediate community or a sense of purposelessness.

Physically, the middle-aged experience a decline in muscular strength, reaction time, sensory keenness, and cardiac output. Also, women experience menopause and a sharp drop in the hormone estrogen. Men experience an equivalent endocrine system event to menopause. Andropause in males is a hormone fluctuation with physical and psychological effects that can be similar to those seen in menopausal females. As men age, lowered testosterone levels can contribute to mood swings and a decline in sperm count. Sexual responsiveness can also be affected, including delays in erection and longer periods of penile stimulation required to achieve ejaculation.

Old Age

The World Health Organization finds "no general agreement on the age at which a person becomes old." Most "developed countries" set the age as 60 or 65. However, in developing countries inability to make "active contribution" to society, not chronological age, marks the beginning of old age. According to Erikson's stages of psychosocial development, old age is the stage in which individuals assess the quality of their lives. In reflecting on their lives, people in this age group develop a feeling of integrity if deciding that their lives were successful or a feeling of despair if evaluation of one's life indicates a failure to achieve goals (Julia R. Miller 2003).

Physically, older people experience a decline in muscular strength, reaction time, stamina, hearing, distance perception, and the sense of smell. They also are more susceptible to diseases such as cancer and pneumonia due to a weakened immune system. Programs aimed at balance, muscle strength, and mobility has been shown to reduce disability among mildly (but not more severely) disabled elderly (Gill, T. M.; Baker, D. I.; Gottschalk, M.; Peduzzi, P. N.; Allore, H.; Byers, A., 2002).

In the words of Blanchard-Fields, John C. Cavanaugh and Fredda (2009), Sexual expression depends in large part upon the emotional and physical health of the individual. Many older adults continue to be sexually active and satisfied with their sexual activity. Mental disintegration may also occur, leading to dementia or ailments such as Alzheimer's disease. It is generally believed that crystallized intelligence increases up to old age, while intelligence decreases with age. Whether or not normal intelligence increases or decreases with age depends on the measure and study. Longitudinal studies show that perceptual speed, inductive reasoning, and spatial orientation decline. An article on adult cognitive development reports that cross-sectional studies show that "some abilities remained stable into early old age."

2.5.0. PARENTING

Parenting variables alone have typically accounted for 20 to 50 percent of the variance in child outcomes (Flaherty, Serena Cherry; Sadler, Lois S., 2011). All parents have their own parenting styles. Parenting styles, according to Kimberly Kopoko, are based upon two aspects of parenting behavior; control and warmth. Parental control refers to the degree to which

parents manage their children's behavior. Parental warmth refers to the degree to which parents are accepting and responsive of their children's behavior.

Parenting Styles

The following parenting styles have been described in the child development literature:

- **Authoritative parenting** is characterized as parents who have high parental warmth, responsiveness, and demandingness, but rate low in negativity and conflict. These parents are assertive but not intrusive or overly restrictive. This method of parenting is associated with more positive social and academic outcomes. Interestingly, the beneficial outcomes of authoritative parenting are not necessarily universal. Among African American adolescents, authoritative parenting is not associated with academic achievement without peer support for achievement. Children who are raised by authoritative parents are "more likely to become independent, self-reliant, socially accepted, academically successful, and well-behaved. They are less likely to report depression and anxiety, and less likely to engage in antisocial behavior like delinquency and drug use." Taylor, Lorraine C.; Clayton, Jennifer D.; Rowley, Stephanie J. (2004).

- **Authoritarian parenting** is characterized by low levels of warmth and responsiveness with high levels of demandingness and firm control. These parents focus on obedience and they monitor their children regularly. In general, this style of parenting is associated with maladaptive outcomes. Interestingly, the outcomes are more harmful for middle class boys than girls, preschool white girls than preschool black girls, and for white boys than Hispanic boys. Furthermore, the negative effects of authoritarian parenting among Asian Americans can be offset by positive peer support. Finally, among African Americans, some elements of authoritarian parenting such as firm control and physical discipline do not serve as predictive factors for negative outcomes. Taylor, Lorraine C.; Clayton, Jennifer D.; Rowley, Stephanie J. (1 January 2004).

- **Permissive parenting** is characterized by high levels of responsiveness combined with low levels of demandingness. These parents are lenient and do not necessarily require mature behavior. They allow for a high degree of self-regulation and typically

avoid confrontation. Compared to children raised using the authoritative style, preschool girls raised in permissive families are less assertive. Additionally, preschool children of both sexes are less cognitively competent than those children raised under authoritative parenting styles. Taylor, Lorraine C.; Clayton, Jennifer D.; Rowley, Stephanie J. (1 January 2004)

- **Rejecting or neglectful parenting** is the final category. This is characterized by low levels of demandingness and responsiveness. These parents are typically disengaged in their child's lives, lacking structure in their parenting styles and are unsupportive. Children in this category are typically the least competent of all the categories (Taylor, Lorraine C.; Clayton, Jennifer D.; Rowley, Stephanie J., 1 January, 2004).

Mother and Father Factors

Parenting roles in child development have typically focused on the role of the mother. Recent literature, however, has looked toward the father as having an important role in child development. Affirming a role for fathers, studies have shown that children as young as 15 months benefit significantly from substantial engagement with their father. In particular, a study in the U.S. and New Zealand found the presence of the natural father was the most significant factor in reducing rates of early sexual activity and rates of teenage pregnancy in girls. Furthermore, another argument is that neither a mother nor a father is actually essential in successful parenting, and that single parents as well as homosexual couples can support positive child outcomes. According to this set of research, children need at least one consistently responsible adult with whom the child can have a positive emotional connection. Having more than one of these figures contributes to a higher likelihood of positive child outcomes (Silverstein, Louise; Carl Auerbach, 1999).

Divorce

Another parental factor often debated in terms of its effects on child development is divorce. Divorce in itself is not a determining factor of negative child outcomes. In fact, the majority of children from divorcing families fall into the normal range on measures of psychological and cognitive functioning. A number of mediating factors play a role in determining the effects divorce has on a child; for example, divorcing families with young children often face

harsher consequences in terms of demographic, social, and economic changes than do families with older children.

Positive co-parenting after divorce is part of a pattern associated with positive child coping, while hostile parenting behaviors lead to a destructive pattern leaving children at risk. Additionally, direct parental relationship with the child also affects the development of a child after a divorce. Overall, protective factors facilitating positive child development after a divorce are maternal warmth, positive father-child relationship, and cooperation between parents (Whiteside, Mary F.; Becker, Betsy Jane, 1 January 2000).

2.6.0. THEORETICAL FRAMEWORK

This research work revolves around children. Every child has the right to the best possible childhood. Early learning for every child today brings together established research findings and diverse perspectives, beliefs and recommended practices. It recognizes that families, communities and cultures hold distinct values about how young children should experience and interact with the world around them.

Values are complemented by detailed attention to the early child development research in the fields of early childhood education, family studies, developmental psychology, neurosciences, anthropology, sociology, pediatrics and epidemiology.

2.6.1. THE CONCEPT OF EARLY CHILD DEVELOPMENT

Early development takes place in the context of families and communities and is shaped by the day-to-day experiences and environments of early life. The steady drip of daily life establishes pathways for lifelong learning, behaviour and health that are inextricably linked to the development of the whole child. The brain orchestrates physical, social, emotional, linguistic and cognitive development. It governs capacities to learn, ways of behaving, and immune and hormone systems that influence physical and emotional health (Mustard, 2006). Genes set the parameters for the basic structures of the developing brain, but it is a child's interactions and relationships with parents and significant others that establish neural circuits and shape the brain's architecture (Shonkoff, 2011).

Children begin life ready for relationships that drive early brain development. The abilities of children to regulate their own emotions, behaviours and attention increase over time with

maturation, experience and responsive relationships. Supporting self-regulation is a central focus of early development because self-regulation skills lead to physical, social, emotional, behavioural and cognitive competence.

Differing cultural and social contexts, including quality of stimulation, availability of resources and preferred patterns of interactions within communities, interact with each child's potential for development early brain development benefits from interactions with adults who are responsive and from activities that challenge young children. Access to shelter, clean water and food, and to developmental opportunities such as parks, high-quality early childhood programs and libraries increases families' abilities to be responsive and stimulating. Fewer resources make it more difficult to sustain optimal conditions for development. In some communities, the percentage of vulnerable children is much higher. Many families and communities face societal barriers (such as poverty, employment demands, transient living conditions, parental health problems, minority ethno-cultural, racial or linguistic status and limited time and/or resources) that make it difficult to support their children's optimal early development.

While children facing these barriers are more likely to have problems, vulnerable children are present across the socio-economic spectrum. Early identification of learning and other developmental difficulties combined with additional support to families can lead to interventions that reduce difficulties and set children on more optimal developmental pathways.. Nutritional diets, physical activity, ability to handle day-to-day challenges and awareness of healthy habits in the early years set a biological foundation and behaviours that promote well-being and healthy choices into adulthood.

2.6.2. THE CONCEPT OF PLAY

Play is a means to early learning that capitalizes on children's natural curiosity and exuberance. Pedagogy is about how learning takes place. Play is child-centred activity that engages a young child and promotes learning. Play is how children make sense of the world and is an effective method of learning for young children. Ideas and skills become meaningful; tools for learning are practised; and concepts are understood.

Play engages children's attention when it offers a challenge that is within the child's capacity to master. Early childhood settings that value children's play create a ''climate of delight"

that honours childhood. Effective settings take advantage of play and embed opportunities for learning in the physical environment and play activities.

Children who thrive in primary school and whose pathways are set for later academic success are those who enter Grade 1 with strong oral communication skills are confident, able to make friends, are persistent and creative in completing tasks and solving problems and excited to learn. These are the same qualities that children strengthen through high quality play during their early years. The imitating and exploring play of infants and toddlers (and the underlying development and organization of the brain) evolve into symbolic thinking and the capacity for pretend or imaginative play. As children engage in pretend play with each other, they are learning to get along with each other, make compromises, resolve conflicts, regulate emotions and behaviour and initiate friendships (Shonkoff & Phillips, 2000).

Pretend play is a form of communication that requires the pretenders to communicate with each other using language gestures and symbolic objects to tell and retell stories. Social competence, emotional and attention self-regulation and the ability to communicate with others are foundational to all types of learning and are best developed in play-based environments. Pretend play is the primary mode of learning during the preschool years and continues to be important into the primary grades. Pretend play means practice in choosing, generating possibilities and taking risks. Children use language and thinking skills to compare and plan, problem-solve, negotiate and evaluate in pretend play. Language shapes and extends their play as they express ideas and tell and retell stories. High quality pretend play means the child is deeply involved and is acquiring and practising emerging skills Pretending involves mental representation. A child's ability for joint planning and assigning roles during pretend play with other children is related to the child's level of theory of mind or ability to understand that others have beliefs, desires and intentions that are different from one's own. The understanding that what one believes and what others believe may not be the same is a critical element in the development of theory of mind that is acquired around four years of age. Children's abilities for joint planning and role assignments during pretend play expand (Shonkoff & Phillips, 2000).

2.6.3. THEORETICAL VIEW TO THE EDUTAINMENT APPROACH

Edutainment as discussed earlier is a derived word that states a mixture of entertainment and education or marriage of education with entertainment (Colace, et. al., 2006). The main purpose of this application is to support education with entertainment. Edutainment has been

used as a classical formula in producing educational computer games which are based on learning theories since 1970s. David Buckingham who is an expert of mass education in England indicated that the concept of edutainment which needs visual material is a style of teaching type mixed with game or mixed with 'the game of describing with least word'.

The different descriptions of edutainment were made by many researchers. Analyzing these definitions is useful.

- Edutainment is defined as to encourage entertaining learning with the way of interaction and communication, exploring by creating learning awareness, trial and error (Shulman and Bowen 2001).
- Edutainment is stated as a place comprised with mixture of many items (such as sound, animation, video, writing and picture) and a place where learners both have fun and learn (Druin and Solomon, 1996).
- Edutainment is described as a type of entertaining which is designed with the aim of educate by including entertaining variety such as multimedia software, internet sites, music, films, video and computer games and TV programs in order to exhilarate in addition to educate (Colace and co, 2006).
- Edutainment is named as a hybrid type which is based on visualizing and animation made with the formats like game, diegetic things and visual materials (Buckingham and Scanlon, 2001).
- Edutainment is to execute permanence of learning by attracting learners' attractions and regenerating their feelings (Okan, 2003).
- Edutainment is also explained as using methods and orders that attract learners' attention in order to provide learners' individual development in learning environments (Fossard, 2008).
- Edutainment is also defined as to provide experiencing and having a good time to the learners with the way of creating and to provide using resources and methods, regarding the meaning of life to learners, as a theory and an application which are combined with educational aims and measurements (Wang and co, 2007).
- Edutainment is applied in order to teach learners how they should use their own knowledge, analyzing things that they learn, combining things that they perceive or evaluating things that they learn (Charsky, 2010).

With the help of these definitions, the common qualities of the Edutainment definitions can be listed as below:

- Entertainment and interaction which is thought missing in education, attracting learners' attention because of being in nature of game.
- Combining education and entertainment and increasing learners' excitement and enthusiasm to teach them subject and information that is hard to learn.
- Occurring learning more easily by making subjects and information that will be taught more enjoyable.
- Attracting learners' attention and supplying permanence of learning by rousing of learners' feelings.
- Making internalizing the difficult subjects easy with the methods of simulation or graph and visual methods like in real life.
- Teaching how to use resources and methods, regarding the value of life by combining educational aims and measurements.
- Teaching how the individuals in learning environments apply their own knowledge.
- Supplying that individuals understand or internalize what they learn.
- Being used in order to teach combining what they perceive or evaluating what they learn to learners.
- Finally, it provides learners' having a good time with the way of creating and experiencing.

If the aim is to teach new things to the next generation and to provide permanence of the teaching, teaching methods should be ordered in the direction of their needs and wishes. The main purpose of Edutainment is to attract student's attention and to make him focus on events and teaching materials during learning (Okan, 2003).

2.6.4. THE CONCEPT OF TAKING A ROLE AND INTERACTION

The effort of including students in class activities of educator affects the result of learning. With the view of this, the result of learning is directly associated to supportive type class behaviors like participation. Even a student takes a part in others' learning experiences (Curran and Rosen, 2006). Dallimore and co. (2006), class debates or having a role in class is named as active learning which is done to make students tied to class. Nunn (1996),

mentioned about being valuable of taking role in a university level class because of presence of a positive relationship between active learning and taking part (Argan and Sever, 2010).

Appleton – Knapp and Krentler (2006) indicated that having a role in class activities and being in an interaction with educator and classmates of a student affect the student's satisfaction level. A research which supports this finding belongs to Curran and Rosen (2006). At the end of their researches, they emphasized that students use seven factors to evaluate the lesson. They remarked the importance of interaction in learning and teaching, character of educator, type of teaching, learning environment, pair factor (Argan and Sever, 2010).

2.6.5. THE CONCEPT OF DRAMA (DRAMATIZATION)

To Pearce (2006), educational drama can be also defined as performing. In the method of performing, an event, situation or a problem is dramatized by a group of students in front of the other students' eyes. After students watch the dramatization, they discuss the event at all points. The method of performing has a effective role in gain emotion and skills. For example, during the play by the way of place themselves in someone's shoes, students try to reflect their feelings and thoughts. While they are carrying out this, they learn the art of performing. As for drama is defined as a teaching technique providing students with learning by experience in which situation how they behave.

It improves students' problem solving and communicating ability and dramatization technique comprises two types: formal drama and natural drama (Demirel, 1998).

Creative drama in education resembles performing method quitely. In this drama type, roles are shared by teachers. However, in creative drama students determine how to perform the roles (Demirel, 1998). From the point of education sciences, drama was built around empiric learning theory. In terms of empiric learning theory, the experiences of learners are main variances leading teaching – learning process. Students obtain these experiences either from past and present living out of teaching process or from the activities that they attended under the guidance of their teachers during teaching. Empiric learning theory is defined analyzing individuals' actions by thinking, evaluating them and restructuring them in consideration of individuals' former experiences in order to make sense of their new experiences (Andersen and co. 2000). Empiric learning theory defines learning as the process of creating knowledge with the result of experiences. Knowledge is comprised as a result of perceiving information and processing it. Empiric learning theory bases on two concepts which have a logical

relation between them; perceiving experiences and processing experiences. Perceiving experiences occurs through concrete living and abstract conceptualizing, processing experiences, active living and reflective observation (Kolb, 1984). Thus education is explained as a process consisted by four phases and the general features of these phases can be ordered as the following (Kuri, 2000).

1. Individuals who perceive the experiences by the way of concrete living and sense contact with the new knowledge and try to integrate this new knowledge into their own feelings and value. In problem solving, they rely on their own senses rather systematic approaches (Kuri, 2000).
2. For individuals who perceive the experiences by the way of abstract conceptualizing or thinking, logic and systematicity are more important than senses. They can organize the knowledge in concepts, principles and theories. They find that global definitions and general principles are more valid than their thoughts. They are quietly successful at topics such as logical analyzing of ideas, systematic planning, perceiving the knowledge (Kuri, 2000).
3. Individuals who process their experiences by the way of reflective observation and watching question different points of view and ideas. They prefer being patient, objective and careful in their decisions. While forming an idea, they rely on their own senses and thoughts. Learning bases on thinking and careful observation (Kuri, 2000).
4. Individuals who process their experiences by the way of active living and pretending prefer applying to proper materials in order to solve a problem of real life or learn new things. To test an idea, it provides the conditions which are necessary. They have the ability of making something, taking risk and acting. They tend to obtain necessary things rather than absolute truth (Kuri 2000).

Individuals in the process of learning sometimes use concrete living and sometimes use abstract conceptualizing while they perceive their experiences. While they process the experiences, they sometimes use active living and sometimes use reflective observation. Learning styles which cause differences in learning occur with the help of the combination of these four phases which create empiric leaning theory. From the combination of concrete living and reflective observation, qualifier learning styles are created. Internalizing type of leaning styles appear from the combination of reflective observation and abstract conceptualizing. Separating types are formed from the combination of abstract conceptualizing and active living. With the combination of active living and concrete living,

establishing learning styles are created (Kuri, 2000). Empiric learning theory is used in many fields of higher education. It can be provided achieving the target purpose with entertainment by drawing the students in learning process with the help of acting and drama methods (Brennan, 2008). Games can be formed like ask and answer of imitation and competition. Games have positive effects on learning but this positive effect can only exist with educator and classroom atmosphere (Argan and Sever, 2010).

2.6.6. THE CONCEPT OF STORY (SIMULATION)

Teaching materials have positive effects on the result of learning. Teaching materials prepared with the way of creativity can increase student participation. Despite of abundance of studies about learning environment and its possible effects on learning, studies about teaching materials are really a few (Argan and Sever, 2010). With this method of teaching, students can include into active debates and even they can link themselves with the real life events used in class with the method of simulation and narration. Simulation method is defined as a technique which provides dealing an event like a real one and studying on it to students. In other ways, it is also stated as a teaching approach practiced on a sample (model) and developed realistically to support learning.

2.6.7. THE EDUCATOR AND CLASSROOM ATMOSPHERE

One of the factors that affect students' success is educator's lesson and his taking students view into account about the topics related to his lesson and his dealing with the view and carrying them along. This is seen as an important principle in terms of providing feedback in teaching learning processes. Educator's encouraging students to participate actively into activities in classroom and having a calm atmosphere in classroom affect students' success positively. Students' knowing the classroom rules in advance, educator's caring about them and being tolerant affect students success to a certain degree. Educators take an important role in giving lessons at university and they help students with grasping and perceiving the subject. The large part of the students focuses on 1236 Nalan Aksakal / Procedia - Social and Behavioral Sciences 186 (2015) 1232 – 1239 multidimensional nature of evaluating of students who are in the experience of class and especially on educators. Educator is an important factor on the success and failure of the lecture. Moreover, other factors which can be effective in students' evaluating educator and lesson should also be understood (Argan and Sever, 2010).

In contemporary education approach, student centered education that is learning is emphasized. Instead of traditional learning defined as permanent alteration of behavior, it is dominated to think that learning is a productive process. Students' learning is also affected by teacher's equipment and learning styles and even the atmosphere of the classroom. Therefore, in order to form the learning atmosphere, educator needs to create positive classroom atmosphere priorly. Classroom atmosphere is related to physical and physiological environment of the class and it has a direct effect on students' behavior and success.

2.6.8. THE CONCEPT OF EDUTAINMENT IN COMPUTER ENVIRONMENT

Edutainment in computer environment is accepted as a sub group of computer games noticed easily with the obvious award structure. And it is apart from educational experience in games (Egenfeldt – Nielsen, 2007). According to Buckingham and Scanion (2001), edutainment in computer environment is defined as a mixed type based on formats like games, stories and visual materials. The purpose of Edutainment in computer environment is to attract learners' attraction and to retain their attraction by tying their feelings to computer monitors thanks to animation colored vividly. This includes an interactive education type. Mc Kenzie (2000), used a term called 'technological entertaining 'which means that technology has tight ties with entertaining but has some deficiencies in strictness and value. Technological entertaining is explained as using technology for just using it without developing reading, writing, questioning skills learners.

Educators considered computer games of a tool which will improve learning after commercial successes in 1980s and 1990s and ordered the reasons of using computer games in education and training as follow:

- Teaching methods go towards learner centered teaching styles which emphasize learner role more actively than teaching methods.
- Computer games can be used as effective tools in teaching complex subjects.
- Computer games increase the motivation of learners.

Technical developments provide using computers in education environments as for visual and audio materials like animation, simulation and interpretation (Kara 2009). However, it is observed that Edutainment in computer environment go slowly into a narrower frame from a conservative approach. In this respect, education and training in Edutainment in computer environment is seen as a villain and it is criticized for supporting learning structure which is

problematic for new generation. Students should bear problematic and annoying conditions which students come across in learning process. Nevertheless, it is claimed that this situation is not come across in Edutainment much. Because of these reasons, negative approach is occurred for Edutainment in computer environment (Buckingham and Scanlon, 2001; Egenfeldt and Nielsen, 2007).

2.6.9. THE CONCEPT OF EDUTAINMENT WITH TV PROGRAMS

Edutainment with TV programs is carried out with TV programs discovered and enhanced by 'Games Companies' which teach by entertaining TV program is managed by 'TV Station' and 'TV Robot'. For instance; 'The Discovery Channel' and 'The National Geographic Channel' in America have a big market share among TV programs produced with content of education all over the world. Furthermore, an agreement has been signed among Learning Channel, History Channel and Southpark Interactive in order to educate by entertaining (Wang and his co. 2007). Edutainment with TV programs is not only about education topics on school level but is also contains teaching target audience some kind of knowledge via film and TV series. For example, it is expressed that O' Sullivan and Desperate Housewives were used as a financial education tool (Argan and his co. 2009). Argan and his co. (2009), determined that for students, memorability increases with the help of the film which is about the subject in the focus group research made in order to decide feelings, thoughts and attitudes towards Edutainment of students who take marketing lesson.

2.6.10. EDUTAINMENT WITH ROBOTS

Last ten years, robots which get dense attraction because of very fast development in information and technology became indispensable part of education activities (Birk, 2008). Yorita and co. (2009) search the role of robots used in various education fields because of preferring distance education. It is identified that students listen to robots used in distance education curiously and with pleasure. Birk and his co. (2008) did a research in 'Novelty Camp' which is a busy study environment encouraging secondary school students engineering and science via humanoid robots.

Secondary school students were educated with various humanoid robots for scientific education. In robotics camp which includes the duties of design, structure and programming, different educational activities were used. In this research, two quietly different platforms were used; the first one of is LEGO used commonly for educational activities, the second one

is Bioloid humanoid robots used commonly for professional research. Although the secondary school students who participated to the research were inexperienced about robotics, it was found that they prefer Bioloid humanoid robots instead of LEGO robots which are used commonly for educational activities. This is because students finding out mechanic programs, information about electronics on their own with Bioloid humanoid robots by entertaining supplied learning permanence and will of repeating experiences at home.

2.7.0. CASE STUDIES

Critical study of existing architectural projects plays an important role in the architect's final design. Case studies helps the designer to foresee the existing problems and subsequently enable him create more effective design solution for the project. Such studies are not intended to produce a replica of the existing project but serve as an inspiration towards the possibility of producing something new and better. This is because the positive attributes are imbibed as primary elements of decision-making, while the demerits guide against repeating similar design errors. The ultimate goal here is to produce a design comprising qualitative and functional improvement of the projects studied.

For this research, the following case studies were carried out:

- Funtopia Theme Park, Lagos
- Nnamdi Azikiwe University Nursery and Primary School, Awka.
- Awka Wonderland and Amusement Park.
- Terra Kulture Exhibition Centre, Lagos.
- Bayou Country Children's Museum, Louisiana, USA.
- Fawood Children's Centre, London, United Kingdom.
- Deakin's University Children's Centre, Australia.
- Good Start Early Learning - Childcare Centre, Waurn Ponds, Australia

2.7.1. CASE STUDY 1

Funtopia Theme Park, Lagos

Location:

KM 35, Epe Expressway, Off Pan African University, Ibeju-Lekki, Lagos.

Architect:

Rabia Designs

Plate 2.8: Image showing Funtopia Lagos | ***Source:*** *Researcher's survey (2016)*

Brief History:

Funtopia Water Park, Ibeju-Lekki, is a complete entertainment park for the entire family. It is set on 2 acres of land and packed with activities for all ages. Located a few minutes away from Victoria Garden City, Lekki Peninsula, Lagos, Funtopia Water Park is a brand new indoor and outdoor state-of-the-art entertainment centre with something for everyone, no matter what age. Situated on 1.8 acres of beautifully landscaped grounds filled with a wide range of recreational activities, Funtopia Water Park, Ibeju-Lekki is arguably the first facility of its kind in Nigeria. It offers 3 giant water slides and 3 interconnecting pools which include an in-pool bar for adults. There are arcade and computer games in 'Cusco City', billiards and table tennis in 'The Shed' and a wide variety of other activities.

Facilities

- Water rides,

- Indoor and outdoor play systems,
- carnival games,
- Outdoor live entertainment
- It also features a variety of souvenirs, snacks, fast food and a poolside bar.

- Other activities include educational programmes for school children of all ages, which usually include exhibitions and workshops.
- Offers 3 water slides, small swimming area, games room, snack bar and bouncy castle, well-maintained indoor-outdoor leisure park.

Plate 2.9: View of the Waterslide and swimming pool at Funtopia Theme Park | ***Source:*** *Researcher's survey (2016*

Plate 2.10: View of the Children playground at Funtopia Theme Park | ***Source:*** *Researcher's survey (2016*

2.7.2. CASE STUDY 2

Nnamdi Azikiwe University Nursery And Primary School, Awka.

Location

Awka (Main Campus): Along Enugu - Onitsha Express Way, Awka Anambra State.

Architect

Works Departments, Unizik

Client

Nnamdi Azikiwe University

Description

Nnamdi Azikiwe University Nursery and Primary School, Awka is located within the university landscape along the Emeka Offor road towards the eastern pole of the university. The Nursery and Primary school was primarily designed and intended for children of the university's academic and non-academic staffs but as well opened to those of the neighborhood. The school runs from Monday to Friday and usually packed with extracurricular activities.

Plate 2.11: front elevation of a classroom | ***Source:*** *Researcher's survey (2016)*

BRIEF HISTORY OF THE UNIVERSITY

Nnamdi Azikiwe University, Awka is a Federal university in Nigeria. Its main campus is located in the southeastern part of Nigeria in Anambra State's capital, Awka, and a second campus is at Nnewi. It is one of twenty-five federal universities which are overseen and accredited by the National Universities Commission.

Nnamdi Azikiwe University came into being as an offshoot of the defunct Anambra State University of Technology (ASUTECH). ASUTECH which was established through Law No. 7 of 30 July 1980 by the Government of the old Anambra operated as a multi-campus university, with campuses in Abakiliki, Enugu, Awka and Nnewi. In 1991, following the split of the old Anambra State into Anambra and Enugu States, the Awka and Nnewi campuses of the former ASUTECH were constituent into Nnamdi Azikiwe University by the Anambra State Edict No.5 of November 26, 1991.

Plate 2.12: Nnamdi Azikiwe University Nursery and Primary School, Awka in pictures | ***Source****: Researcher's survey (2016)*

Nnamdi Azikiwe University was taken over by the Federal Government by Decree No. 34 of July 15, 1992 In 1991, after the former Anambra State was split into Anambra and Enugu States, the Awka and Nnewi campuses of the former Anambra State University of Technology (ASUTECH) were combined into Nnamdi Azikiwe University, which was later taken over by Federal government. The university is named after Nnamdi Azikiwe, the first president of Nigeria. The Awka Campus became Nnamdi Azikiwe University. In 1992, the Federal Government of Nigeria took over the University from Anambra State. Nnamdi Azikiwe University, thus, became a Federal University.

Facilities

- Children's playground
- Block of classrooms
- Library
- Gate house
- Administrative unit.

Plate 2.13: Children's playground at NAUNursery and Primary School | ***Source:*** *Researcher's survey (2016)*

APPRAISALS

- MERITS

- The nursery school is well positioned and easily accessed by its users.
- There is an adequate parking space within the premises.
- Good lighting / illumination in the offices and classrooms

- DEMERITS

- Poor zoning of activities in the school.
- Lack of modern play equipments in the playground for school children
- Lack of auxiliary spaces like multi-purpose hall, museum kitchen/canteen which contributes to the relaxation of tourist/ visitors to the museum.
- Parking space is not designated appropriately as the school playfiueld field is as well uses as the parking space

Plate 2.14: View of primary two pupils in their classroom | ***Source:*** *Researcher's survey (2016).*

2.7.3. CASE STUDY 3

Awka Wonderland And Amusement Park.

Location

Agu Aba Industrial layout, Opposite Mobile Police Barrack, Along the Enugu-Onitsha Express Road, Awka, Anambra State

Client

A private development owned by Chief Austin Ndigwe

Description

Awka Wonderland and Amusement Park is one of the best Amusement park in West Africa as it is a combination of an amusement park, a zoo, lodging, resort and leisure. At Awka Wonderland there is a zoo experience with so many exotic, beautiful and fascinating animals. Visitors can take a height plunge in the beautiful Ferris Wheel ride, where the individual is taken to an amazing height and then plunged deeply towards the earth. It's quite an experience. There is also a Pirate ship that swings back and forth for the children. It is a beautiful experience that can only be had at Awka Wonderland.

Plate 2.15: View of the wonderful landscape at Awka wonderland. | ***Source:*** *Researcher's Survey (2016)*

Facilities

- Zoo corner
- Lodging facilities and accommodation
- Indoor and outdoor Games facilities
- Fitness area
- Restaurant and bar
- Events centres
- Swimming pools
- Children play ground
- Ferris Wheel
- Pirate Ship
- The Carousel

Plate 2.16:The Indoor games building at Awka wonderland. ***Source****: Researcher's Survey (2016)*

Plate 2.17: View of the carousel behind at Awka wonderland | ***Source****: Researcher's Survey (2016)*

Plate 2.18: The Carousel at Awka wonderland. | ***Source**: Researcher's Survey (2016)*

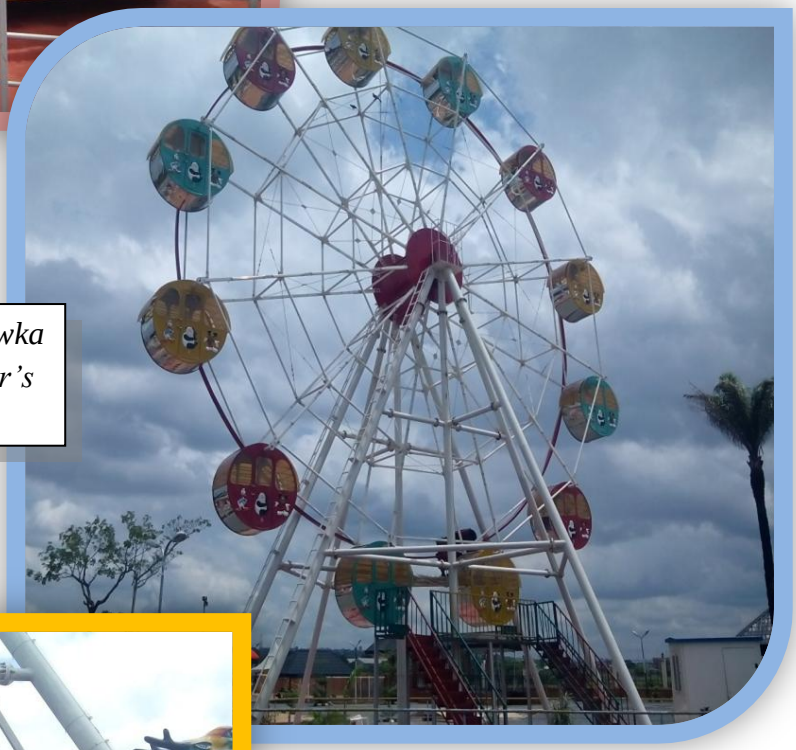

Plate 2.19: The Ferris Wheel at Awka wonderland. | ***Source:** Researcher's Survey (2016)*

Plate 2.20: The Pirate Ship at Awka wonderland.| ***Source:** Researcher's Survey (2016)*

Appraisals

- The park changes the face of hospitality and tourism industry in the state as nothing like it is found within the town. It is the first of its kind with facilities to enhance relaxation and boost healthy living.
- The park serves as a new tourists' destination for the state and helps to tap the reach tourism potential of the state.
- The park is safe and secured for people and their families who want to have fun as it is situated opposite a police barrack.
- Awka Wonderland provides varieties of what people want, the games are so much that an individual cannot exhaust them in a day, the animals are there, the environment has green tree.
- The new park also represents a great private sector intervention in the tourism industry in the state but needs government's support.

2.7.4. CASE STUDY 4

Terra Kulture Exhibition Centre, Lagos.

Plate 2.21: Entrance view of Terra Kulture | ***Source:*** *Photo by Author's field work (2016)*

LOCATION

Terra culture exhibition centre is located at plot 1376 Tiamiyu Savage, off Ahmadu Bello way, Victoria Island, Lagos.

CLIENT

The exhibition centre is a privately owned educational and recreational centre, and has two co-founders;

- Mr.Tayo Aderinokun (late)
- Mrs. Bolanle Austin Peters.

ARCHITECT

The exhibition centre was designed by Arc. Erejuwa Gbadebo.

BRIEF INTRODUCTION

Terra Kulture is a Nigerian cultural centre set up to promote the richness and diversity of Nigerian language, arts and culture. The concept of the centre was borne out of the fact that Nigerian culture is in desperate need of preservation- thus the creation of a centre where Nigerians and foreigners could properly learn about our culture and languages.

FACILITIES

The exhibition centre houses the following facilities;

- An art gallery
- An art shop
- A 250-seating capacity multi purpoe hall
- Language classes
- Audio visual room
- An African boutique
- Restaurant\ café
- Book stores
- Mini library

Plate 2.22: Picture showing exhibition hall

Source: *photo by Author's field work 201*

Plate 2.23: View of the restaurant at Terra Kulture | ***Source:*** *photo by Author's field work 2016*

Plate 2.24: View of restaurant cum exhibition at Terra Kulture | ***Source:*** *photo by Author's field work 2016*

Appraisals

- The open nature of the design makes the use of natural lighting and ventilation possible; thus exhibition galleries are well lighted.
- The site was well landscaped, thereby providing a pleasant and comfortable environment for its users.
- The façade of the building does not portray Nigerian culture in any way.

The design of the building gave room for adequate circulation within spaces in the building.

2.7.5. CASE STUDY 5

Bayou Country Children's Museum, Louisiana, USA

Location:

211 Rue Betancourt, Thibodaux, LA 70301, United States Of America

Architect:

Architect Mike Bourgeois of Duplantis Design Group

Client:

Non-profit organization presided over by Kathleen Gros deputized by Mrs. Tina Wong, Vice President.

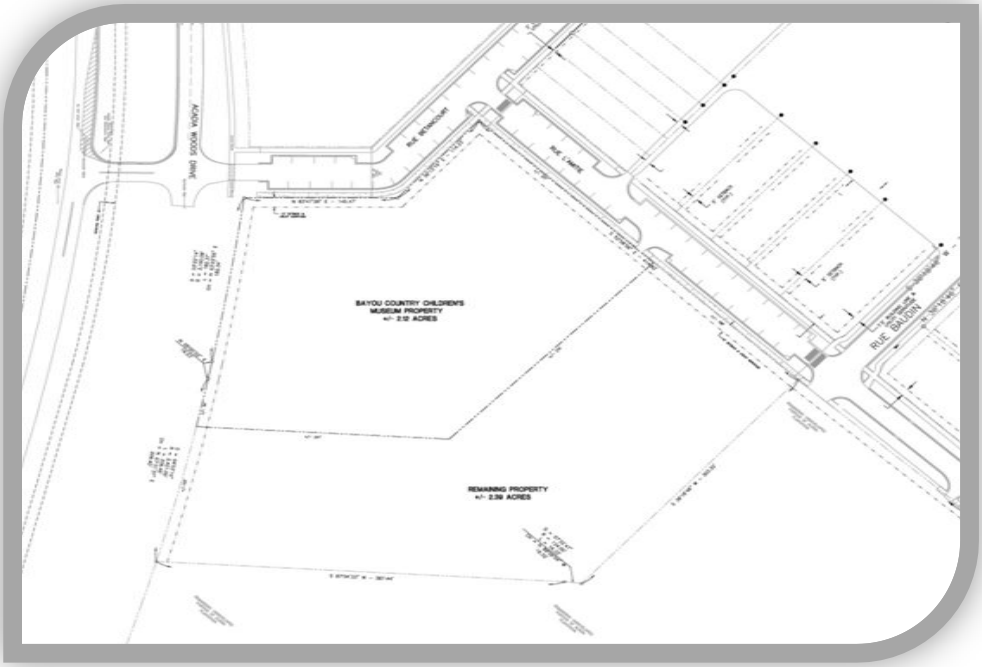

Plate 2.25: Site plan of Bayou Country Children Museum (BCCM) | **Source:** *BCCM newsletter Summer, 2009*

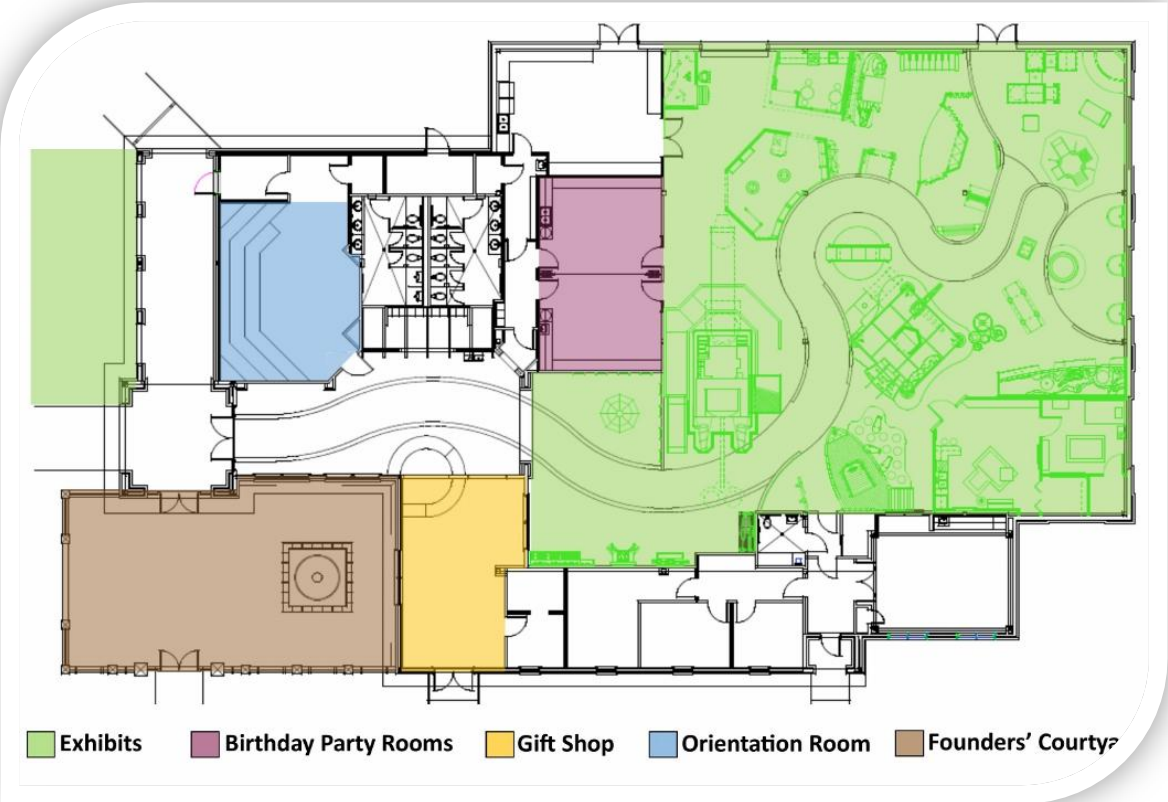

Plate 2.26: Floor plan of Bayou Country Children Museum (BCCM). | ***Source:*** *Google image (2016)*

Brief History

The construction of the Bayou Country Children's Museum has started in 2011. The ceremonial ground breaking celebration was held on the chilly morning of November 29, 2011. Many supporters, dignitaries and friends were on hand to share in the excitement. Thibodaux Mayor, Tommy Eschete addressed the attendees. Site preparation began the very next day and the cement slab was poured on January 27, 2012. B.E.T. Construction, Inc. completed the construction of the museum August of the following year.

Mission

The mission of the Bayou Country Children's Museum (BCCM), a 501(c) (3) organization, is to act as a gateway of knowledge that educates area children and their families while promoting the unique cultures of south Louisiana with entertaining, educational, and interactive experiences that enrich the lives of children and visitors through innovative communication strategies, activities and exhibits.

DESCRIPTION:

Louisiana culture comes to life in the new Bayou Country Children's Museum. Located in Thibodaux, Louisiana, this hands-on museum provides the type of recreational learning experience desired by parents and educators that has a lasting impact on child development. Bayou Country Children's Museum is a gateway of knowledge that educates area children and their families while promoting the unique cultures of south Louisiana with entertaining, educational, and interactive experiences that enrich the lives of children and visitors through innovative communication strategies, activities and exhibits.

The museum is open year round, offering a climate controlled, unique environment for affordable good family fun. It also includes a unique gift shop called the "Bayou Boutique," a fun and colorful space that features gifts for children of all ages. Here shoppers can find souvenirs from a trip to the BCCM as well as educational toys and unique quality gifts that relate to the museum exhibits and activities. The museum offers party rooms that can be booked for birthdays, etc. and includes admission to the museum for party guests. Refreshments are restricted to the party room and may be contracted through the museum.

Plate 2.27: A large see through globe which demonstrate the many cultures of the people. | ***Source:*** *BCCM newsletter Summer (2009)*

Benefits to the Bayou Region

According to the Association of Children's Museums (ACM), of which we are a member, children's museums have many positive impacts on local communities. A children's museum in the Bayou Region will:

- Give children a time and place to just be children.
- Allow families to connect in meaningful ways.
- Light a creative spark for discovery and lifelong learning.
- Develop essential learning skills in children.
- Strengthen community resources that educate and care for children.
- Help reverse handicapped stigma and various kinds of discrimination.
- Build interaction across socio-economic levels.
- Contribute to local economies

Facilities

- Orientation room for field trips & special events
- Health and wellness
- Founder's courtyard
- Birthday party rooms
- Children theatre
- Conveniences

Plate 2.28: Entrance view of BCCM. | ***Source:*** *Google image (2016)*

- **Exhibits:** Visitors to the Bayou Country Children's Museum will experience what it would be like to travel down a bayou from the Mississippi River to the Gulf of Mexico. Envision the wide variety of crops, massive oak trees, Cajun cottages, seafood, unique bridges, boat building, oil and gas industries and of course coastal erosion. Because all exhibits will have a "Cajun Flair," the whole museum is unique. The grocery store is called the Farmer's Market to tie in with road side growers, local produce and recipes. All visitors depart the centre knowing more about the "bayou country" and the Cajun way of life. The museum is broken up into 9 main exhibit areas, each with their own grand theme. There are signature exhibits throughout the entire museum. They are designated as "Signature Exhibits" because they can only be experienced in the Bayou Country Children's Museum.

Plate 2.29: The founder's courtyard. | ***Source:*** *BCCM newsletter Summer (2009)*

- **Gifts shops:** Bayou Boutique, the museum gift shop, offers hands-on educational and exciting gifts for children. Many of the items reflect the museum exhibits! Visitors can choose from a wide selection of unique toys, books, games and craft kits. The Bayou Boutique is the ideal place to find gifts for the holidays, birthdays, or any special occasion. The shop is open during all museum hours – admission fees are not required to shop. Museum members will receive a discount off every purchase.

Plate 2.30: Gift Shops at Bayou Country Children's Museum. | ***Source:*** *BCCM newsletter Summer (2009)*

Appraisals

For children, play is a critical way to find out about new things. The ability to play is instrumental in scientific exploration, discovery and creativity. The museum provides children ages 2-12 years with a unique learning environment that enhances the classroom experience. Most exhibits correspond with established Grade Level Expectations and further inspire teachers to include more hands-on activities in the classroom. Interactive exhibits blend play with learning to help kiddos absorb lessons easily. Little ones interested in learning about Louisiana's history will enjoy the smattering of cultural exhibits throughout the museum, including a Mardis Gras float and the Miss Clotille, a shrimp boat that encourages kids to explore the world of a real fisherman. Science-minded kids, meanwhile, can learn about nutrition and exercise in the Health and Wellness Gallery, or explore the mechanics behind bridges at the Construction Gallery. Kids can also head to the Performance Gallery to mount a puppet show or finally finish composing their opus on a gigantic floor piano

2.7.6. CASE STUDY 6

Fawood Children's Centre, London, United Kingdom

Location

Fawood Avenue, London, United Kingdom (England)

Architect

Alan Lai of Alsop Design Ltd

Type of School

Pre-primary

No. of Students

45/capacity for 75

Type of Project

New building

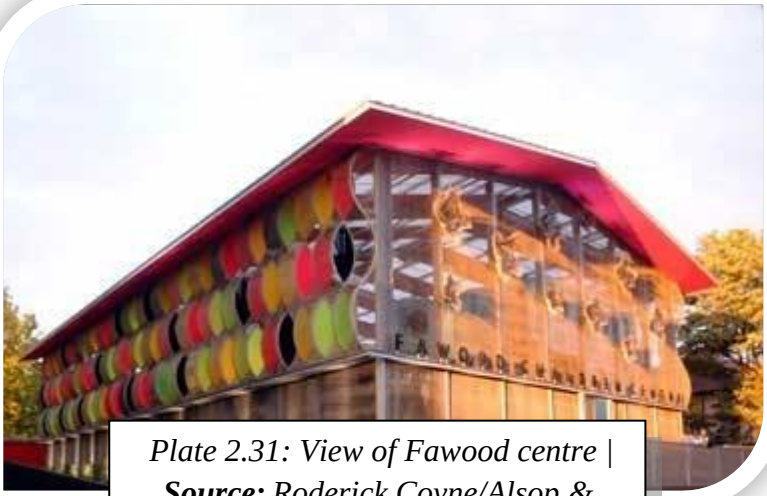

Plate 2.31: View of Fawood centre | ***Source:*** *Roderick Coyne/Alsop & Partners(2016)*

Gross Surface Area

1 600 m2

Year of Completion

2004

Client

Stonebridge Housing Action Trust

*Plate 2.32: View of Fawood centre | **Source:** Roderick Coyne/Alsop & Partners(2016)*

Structural Engineers:

Adams Kara Taylor

Criteria:

Flexibility / Community / Sustainability / Security

Mechanical & Electrical Engineers:

Fulcrum Consulting (pre-construction)

Pinnacle Building Services (post-construction)

Project Artist:

Joanna Turner

Lighting Designer:

Janet Turner

Design and Build Contractor:

Durkan Construction

Total area: 1,220 m2

Covered play area on ground floor: 430 m2

Enclosed accommodation on three floors: 620m2

*Plate 2.33: Indoor play area at Fawood centre. **Source:** Roderick Coyne/Alsop & Partners (2016)*

Plate 2.34: Site Plan of Fawood Children Centre | ***Source:*** *Roderick Coyne/Alsop & Partners (2016)*

Brief History

Completed in 2004, Fawood Children's Centre provides 3 blocks of space to create a nursery, office and adult education centre. Set over three floors the blocks of space are interconnected by external walkways all housed within a colourful meshed shell designed by Alsop Architects. Commissioned by the Stonebridge Housing Association Trust this innovative approach to building was rewarded by being short-listed for the RIBA Stirling Prize in 2005.

Description

The bright and colourful Fawood Children's Centre in north-west London is a groundbreaking design venture for the education of young children, and reflects current thinking about how environments can affect learning. The Children's Centre initiative is based on the concept that providing integrated services for children and families that are locally based and easily accessible will result in long term benefits for all. Integrated services, imaginative spaces. The Centre houses a state-of-the-art nursery combined with office space and training facilities to offer early education integrated with day care, family support and

outreach to parents including child and family health services, and access to training and career opportunities.

*Plate 2.35: Ground Floor Plan of Fawood Children Centre | **Source:** Roderick Coyne/Alsop & Partners(2016)*

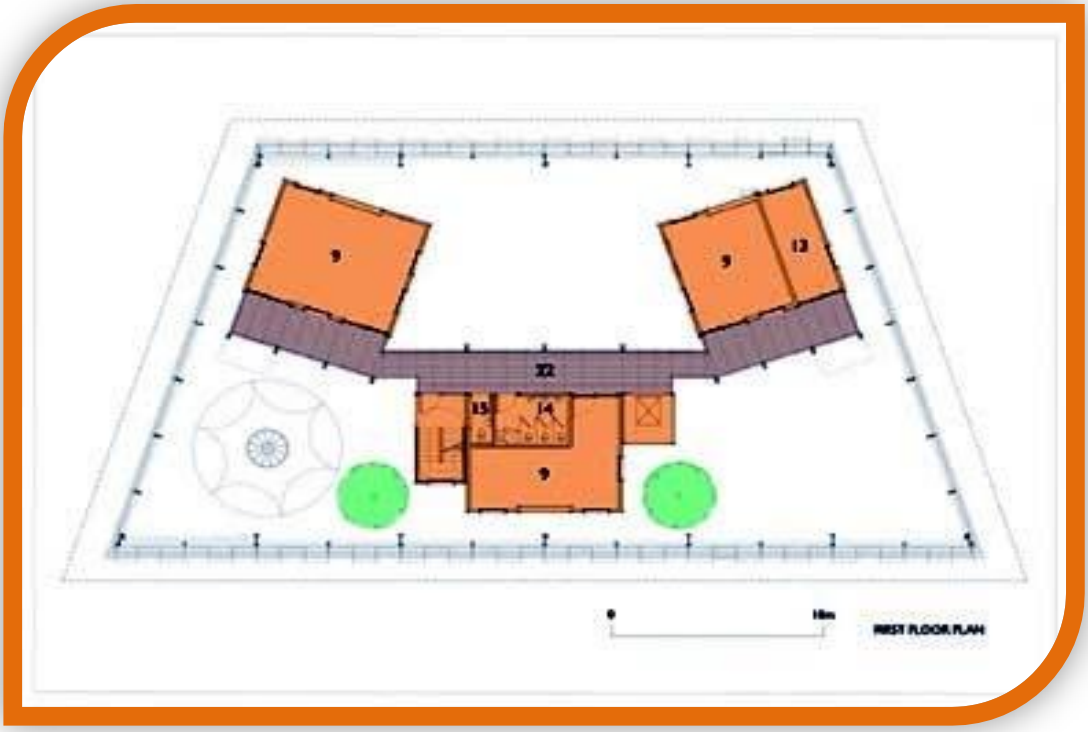

Plate 2.36: First Floor Plan of Fawood Children Centre | Source: Roderick Coyne/Alsop & Partners(2016)

The imaginative use of open spaces, with an emphasis on natural light and visual harmony, creates a child-friendly environment – a colourful "playbox" for dreaming and learning. Project architect Alan Lai of Alsop Design faced the challenge of creating a space not only to meet the needs of the children inside, but to also provide an enduring bright spot for the surrounding community. The local area was undergoing large-scale regeneration and the council wanted a focus for the community which would be visually exciting. Fundamental to the design was a desire to provide an environment that supports choice for children, includes space to socialise, builds confidence and enables independent learning. In keeping with this ethos, the Centre was built using recycled sea containers, which are linked by wooden decking and warmed by under floor heating.

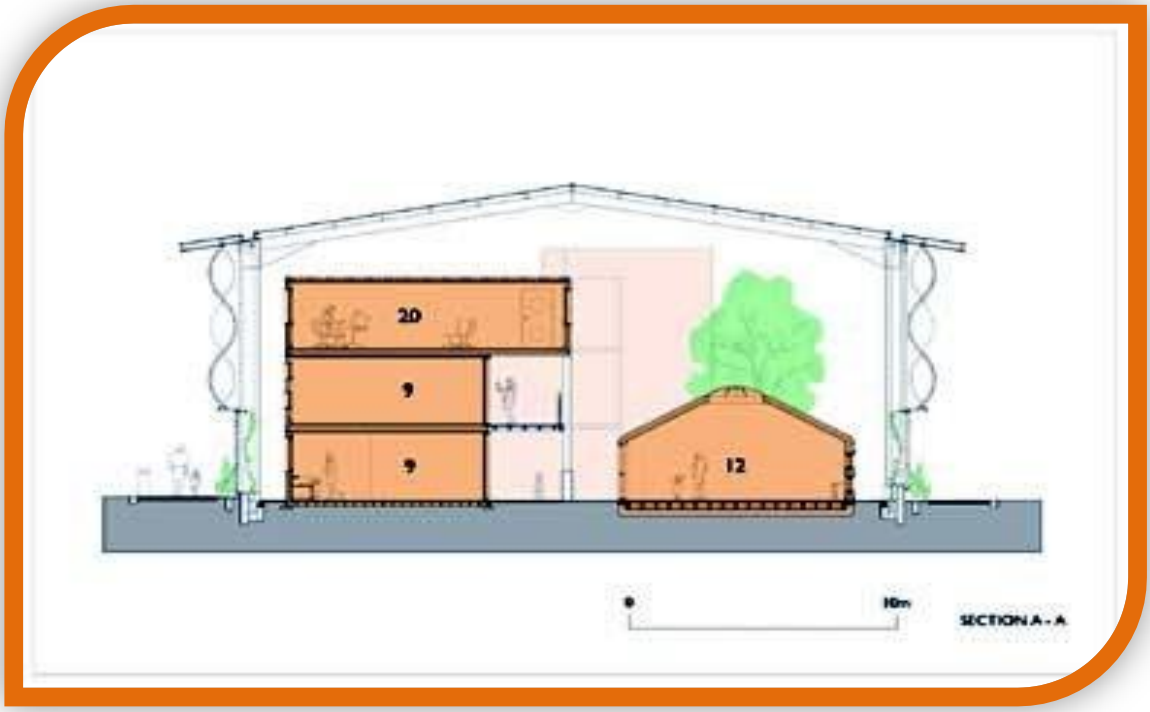

Plate 2.37: Section A-A of Fawood Children Centre | Source: Roderick Coyne/Alsop & Partners (2016)

Facilities/Construction Details

The new Fawood Children's Centre provides, under one roof, a nursery for 3-5 year olds, nursery facilities for autistic and special needs children, and a Children's Centre with adult learning services.

- The primary structure is a trapezoid shed enclosure, which takes the form of a steel portal frame structure with a deep overhanging roof, formed of a mix of opal

polycarbonate roof cladding and bright pink powder-coated profiled steel cladding, on galvanized steel purlins and portal frame.

- The internal accommodation for the nursery is provided by a number of recycled shipping containers painted in bright colors and decorated with applied artwork. Three groups of three-story shipping container structures are connected by walkways, projecting balconies, lift and steel staircases. The containers have been fitted with under-floor heating and simple finishes to provide efficient and low cost classroom space.
- A brightly colored Mongolian Yurt, a canvas tented structure, provides a colorful focus to the interior.
- Designed to be used as outdoor rooms, the spaces between the containers include a piazza with timber decking surrounded by a willow tunnel, a soft play area, a tree house, an outdoor stage area, water gardens and a climbing platform.
- The roof and the mesh together shelter and secure all the indoor nursery functions, outdoor play areas, and circulation spaces. The combination of built and adapted internal environments has permitted a rapid construction program, and a flexible response to the demands of the daily activities of very young children, at a relatively low cost.

APPRAISALS

It is a very child-friendly building and the security is great. It's like a theme park and gives the children plenty of opportunity to get lots of exercise.

The innovative use of mesh walls to cover and protect the open air play areas creates a colourful social space for development and a decorative focal point for the community.

The centre is designed in such as way that the children are out in the fresh air without actually being outside.

2.7.7. CASE STUDY 7

Deakin's University Children's Centre, Australia

Location:

Waurn Ponds Campus, Geelong, Victoria, Australia

Architect:

Dock 4 Architects

Client:

Deakin University

Building Area: 1,250m^2

Outdoor Play Area: 1, 700m^2

Plate 2.38: Site plan of Deakin's University Children's Centre | ***Source**: dock4architects*

Brief History

A new children's centre for an expanding university campus, with a childcare centre, a kindergarten, a maternal and child health facilities for the university's early years teachers training courses.

The principal children's room wrap around a central courtyard and internal form square with adjacent kitchen that form the core of the facility, helping to support a sense of community

within the building. Emphasis is placed on the idea of seamless indoor-outdoor learning environments and the creation of child-autonomous spaces.

FACILITIES

- Outdoor play/learning play
- Children's room
- Storage areas
- Multipurpose/occasional care rooms
- Nursery classrooms
- Toddler classroom
- Kindergarten classrooms
- Conveniences.

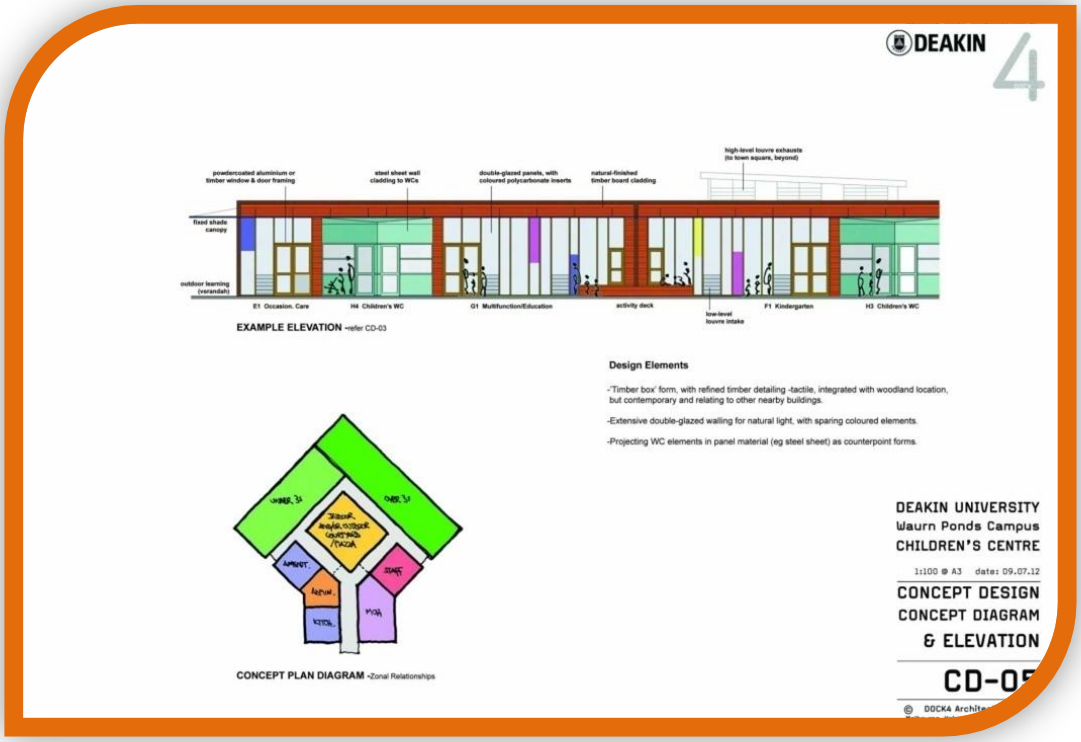

Plate 2.39: Concept design, concept diagram and elevation | ***Source:*** *dock4architects (2016)*

Construction Materials

- Sheet steel wall cladding
- Natural finishing timber board cladding
- Powder coated aluminum or timber window and door framing
- Extensive double-glazed walling for natural light with sparing coloured elements.

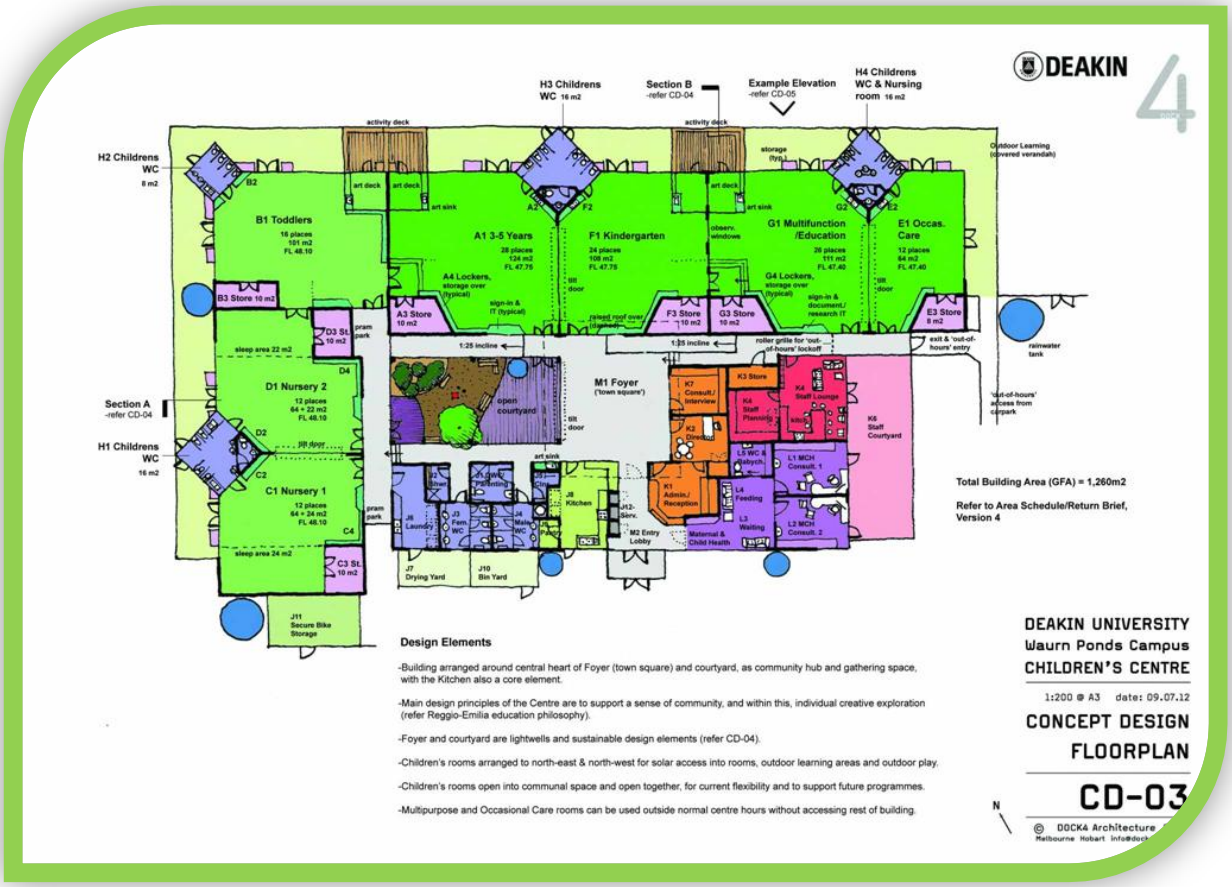

Plate 2.40: Floor plan | ***Source:*** *Dock4architects*

APPRAISAL

Deakin's University Children's Centre is a flexible, forward-thinking design that can accommodates changing philosophies in early-years programmes delivery.

Plate 2.41: Site Plan, Floor Plan And Elevations | ***Source:*** *dock4architects (2016)*

2.7.8. CASE STUDY 8

Good Start Early Learning - Childcare Centre, Waurn Ponds, Australia

Location:

Waurn Ponds, Australia

Client:

The Benevolent Society, Mission Australia, the Brotherhood of St Laurence and Social Ventures Australia.

BRIEF HISTORY

Goodstart was founded by a partnership of four of Australia's leading community sector organisations – The Benevolent Society, Mission Australia, the Brotherhood of St Laurence and Social Ventures Australia – who wanted to address one of the key sources of many societal problems – poor early childhood experiences. Operating as a social enterprise, their vision is for all Australia's children to have the best possible start in life. Goodstart was founded on a vision of giving children the best possible start in life through access to quality early learning. Goodstart's founding members believe that if every child has access to quality early learning, it has the potential to transform Australia. As a social enterprise, Goodstart is a not-for-profit organization that operates with strong business disciplines. We reinvest operating surpluses in our network, our people and our purpose – for the benefit of every child and their early learning.

Plate 2.42: Floor Plan of Goodstart | ***Source:*** *Goodstart*

DESCRIPTION

Goodstart Waurn Ponds is a state of the art purpose built centre, that focus on using the natural environment as the third teacher. The play spaces and resources are natural and reflect on the tranquility that encompasses our environment. This provides opportunities for children to explore and express wonder in their environment.

Plate 2.43: Goodstart Waurn Ponds at various stages of construction | ***Source:*** *Goodstart media (2016)*

Educators and teachers engage in conversations that encourage thinking and imaginative skills in their everyday play experiences. The centre is within walking distance to supermarkets, medicals centres, cinemas and cafes. The centre provides places for up to 122 children and provides early education and care programs including a Government Funded

Kindergarten Program 5 days a week to university staff and students and local families, caring for children from 6 weeks to 5 years.

Facilities

The centre provides high quality care and education in an early childhood appropriate environment. The centre's specific facilities and services include the following:

The many opportunities for the children to be involved in real life experiences such as:

- Nappies
- Morning Tea
- Lunch
- Afternoon Tea
- Age appropriate shaded playgrounds
- Age appropriate toys, books and reading materials
- Computers in the Kindergarten Learning Space
- Qualified and dedicated early childhood educators
- Nutritional menu incorporating daily dietary requirements
- Quiet, tranquil sleeping room in Nursery
- Funded kindergarten/preschool program
- A vegetable garden where the children plant, water, harvest and eat the produce
- A wormery which the children help with and feed the worms the fruit scraps each day. Pet fish which the children have named and they take turns to feed them.
- Encourage sustainable practices in our centre by asking the families to bring in recycled materials to sort into our recycle station, which then the children re use for building or arts and crafts.
- Presence of family room for families to use at any time of the day and for parents to take some time out of the room during their child's orientation sessions

Appraisals

- The childcare centre offers community and family spaces, natural environments and the onsite centre cook prepares nutritious meals for all the children, including children with dietary requirements.

- Drop off and pick up is made easy for families as the centre have ample car parking opportunities in our secure car park.

*Plate 2.44: Children learning Room / workshop | **Source:** Goodstart media (2016). www.goodstart.org.au*

*Plate 2.45: Children Play Room | **Source:** Goodstart media (2016). www.goodstart.org.au*

2.8.0. IMPLICATIONS FOR THE DESIGN: THE IDEAL FACILITY

From the various case studies of similarly existing facilities and reviews from journals, the following deductions were made:

SPATIAL ORGANISATION

A children centre should be spatially organized in a way that it will promote social interaction by encouraging user participation and flexibility of spaces. Hence all the principles and steps of spatial organization must be considered in the conceptualization stage of the design.

ZONING

Well-articulated pattern of circulation in a building reduces confusion and at the same time controls the movement of visitors. Proper zoning determines circulation pattern and ensures security. This is a common observation in the studied centres. For purpose of clarity, the functions of this design will be properly grouped.

ORIENTATION

The proposed children's edutainment centre should be properly oriented on site to take full advantage of the climatic conditions such as the prevailing wind, relative humidity and solar radiation.

Fire hydrants will be located at reasonable intervals where they can be easily reached. Also, fire resistant materials, fire detection gadgets and sprinklers will be used in the design as preventive measures.

ACCESSIBILITY

In a design of this magnitude, particular attention must be given to access, parking and reception requirements. One effective strategy used to allow easy accessibility in the centres studied is the direction and separation of groups attending various functions. Since the scope of the design does not include guest accommodation, it is recommended, as desirable, that the centre be at most 30 minutes drive to hotels for lodging delegates. It is also an advantage if the centre is located close to, or easily accessible from, media houses.

PHYSICALLY CHALLENGED

The disabled are also considered as users of the children centre and so, will be considered right from the inception to the completion to the design. As observed in most of the studies, staircases will be of low risers, wide threads and uniform riser: thread proportion while the

slope of ramps will be gentle. Circulation paths would be clear, wide enough to accommodate wheel chairs and unobstructed by any barrier especially where access to a public space is possible for public use.

LANDSCAPING

Landscaping is aimed at improving the physical environment. Proper landscaping helps to satisfy user requirements, improve environmental comfort, serve as visual relief and also enhance the aesthetic value of the surrounding and the building. In most of the studied centres, it was observed that landscaping was an essential part of site development that provided screening and a means of relaxation in addition to balancing the dominance of the built environment.

FLEXIBLE USE OF SPACE

As observed in most of the case studies carried out, flexibility of spaces in the design of the children centre would be ensured.

LIGHTING

The importance of lighting in a project of this scheme cannot be over-emphasized. Natural and artificial lighting source were used in most of the studied children nursery schools and centres but it is important to note that most of the multipurpose hall of some the studied centres were either windowless or depended more on artificial lighting.

SECURITY

The security level in a children centre is of utmost importance because of the safety of children at the centre, and children art works of great educational and monetary value would always be on exhibition. An effective security system as noticed in existing children centres are ensured through the use of electronic gadgets like surveillance camera and motion dictators or by the use of guards on patrol. Limiting the number of entrances into the building at any given time can also be used to ensure security within complex.

FIRE SAFETY AND EMERGENCY EXITS

Fire is a serious hazard that can befall any building; thus, adequate safety measures should be considered throughout the design. Circulation space and systems of the proposed centre are to be designed so as to assist fast and easy evacuation of its occupants in the event of fire outbreak. Emergency exits will be located at strategic points.

CHAPTER THREE

3.0. PRESENTATION OF ANALYSIS

This chapter contains analysis of the study area and criteria (to be) used in selecting the centre's location and for planning and programming the site space requirements. Examples of space programs for different centre sizes are also provided. Any variances to the mandatory requirements must be approved by the relevant authorities. The likelihood of the need for such a variance should be identified as soon as possible in the design process. Typically, this would be at the initial design workshop or during the Prospectus Development Study process. The centre is subject to the state and (if applicable) local childcare licensing requirements.

3.1.0. THE STUDY AREA

The city of Awka (capital of Anambra state) lies in the middle of the territory with the city centre located on a bearing of 6.12°25' North of the equator and 7.04°04' East of the Greenwich meridian and have an estimated population of 301,657 as of the 2006 Nigerian census. The city is located about 960km east of Lagos, in the centre of the densely-populated Igbo heartland in South Eastern Nigeria and is popular for the caliber of blacksmiths it has produced in the past. The West-East highway links Lagos, Benin city, Asaba, Onitsha and Enugu to Awka and several local roads link it to smaller towns and villages such as Agulu, Nibo, Awambia, Enugu-Ukwu and Agbagana (Britannica Concise Encyclopedia. Retrieved 2007-02-2).

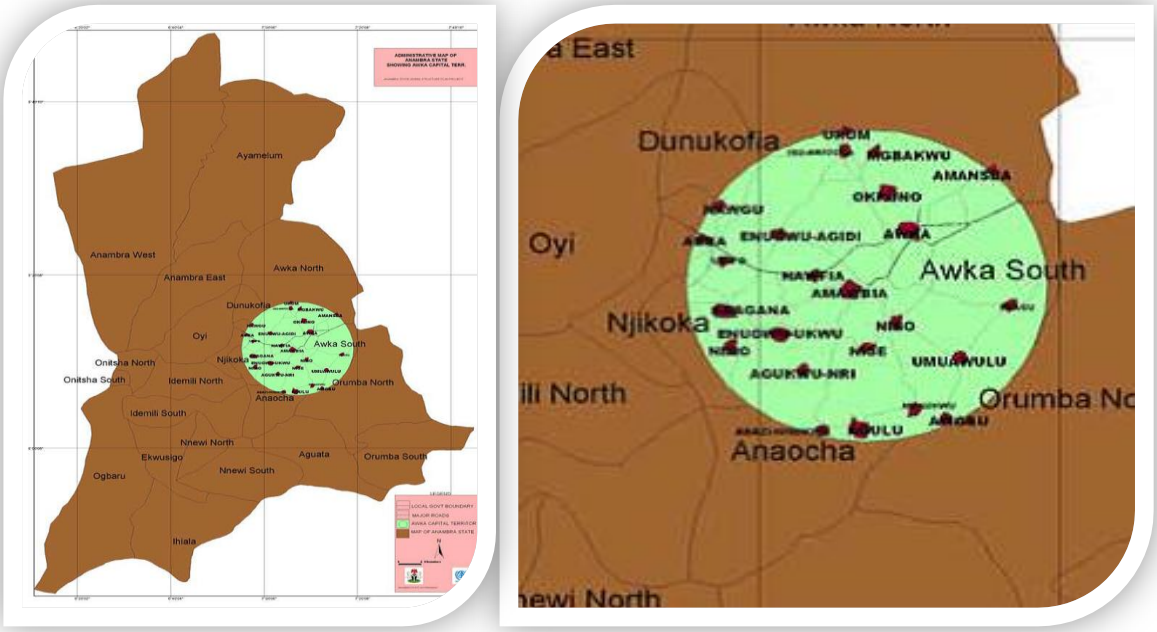

Figure 3.1: Administrative Map of Anambra State showing Awka capital territory. | ***Source:*** *UN-HABITAT, 2009*

Before the creation of Anambra state in 1991, the town had played different roles as administrative/zonal headquarters to different governments. In these roles, the town had remained more rural than urban in scope and essence. This had to change as soon as it became a state capital.

The influx of population made up mainly of returnee civil servants from Enugu, employees of federal ministries and parastatals, student population of Nnamdi Azikiwe University and others had since resulted to tremendous pressures on existing infrastructures and services.

(Awka structure plan project, 2009).

In addition to Awka being a capital city, the following criteria also facilitated the choice of Awka for this project.

- Awka is the administrative/political centre of Anambra State.
- Easy accessibility to the capital territory.
- Increase in social, political and industrial activities in Awka.

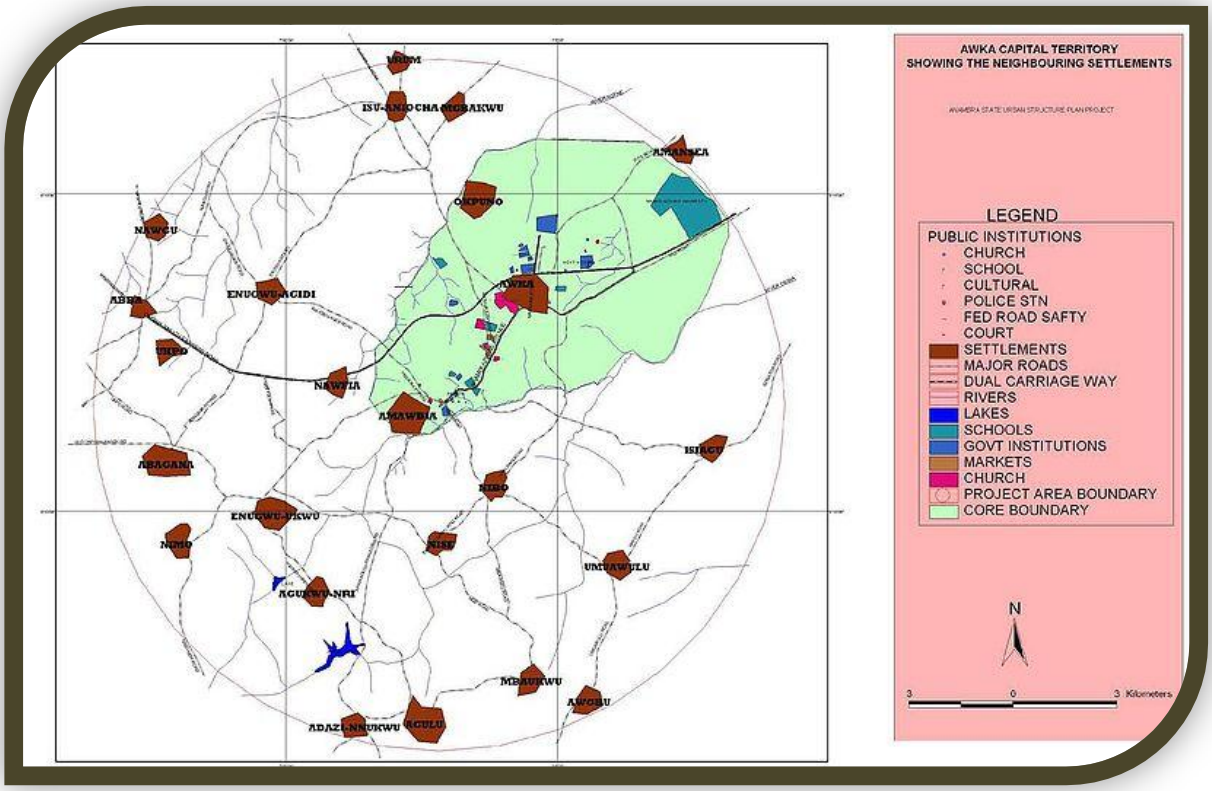

Figure 3.2: Map showing Awka Capital Territory | ***Source**: UN-HABITAT, 2009*

3.1.1. POPULATION

Awka capital Territory has witnessed one of the fastest population growths in the country. The annual growth rates witnessed in the area for the past sixteen years vary from 2.20% per annum for Orumba North to 6.47% per annum for Njikoka LG. The average rate of growth per annum for the area is 2.63% per annum. Both Awka North with its figure of 5.34% and Njikoka recording 6.47% are experiencing faster population growth rates when compared to the other LGs in the Planning Area (Table 1).

According to the 2006 census, the population of the six local Government Areas that make up the Awka Capital Territory is 1,003, 911, with an average annual growth of 3.17% per annum recorded during the past sixteen years.

Local Government	1990	2006	Annual growth
Awka South	130,664	189,049	2.79
Awka North	60,728	112,608	5.34
Dunukofia	73,473	96,323	1.95
Njikoka	72,948	148,465	6.47
Orumba North	127,476	172,405	2.20
Anaocha	200,607	85,00	2.63
Total	665,896	1,003,911	3.17

Table 1: Population Growth of Awka Territory | ***Source****: Anambra State; People, Population and Settlement (journal)*

3.1.2. ECONOMY

The economy of Awka city revolves primarily around government since many state and federal establishments are located there. Awka is home to several government and individually owned establishments such as the State Governor's Lodge, State Assembly and State Ministries for Health, several educational institutions (e.g Nnamdi Azikiwe University) , the Anambra Broadcasting Service (ABS)(a media house) ,a number of federal institutions including the Central Bank of Nigeria (Awka branch), the NTA Awka media station, branches of the Federal Inland Revenue Service, Federal Road Safety Commission, Nigerian Immigration Service, Corporate Affairs Commission, Federal Ministry of works, Awka Wonderland (a private establishment owned by Chief Austin Ndigwe) and several other social infrastructures.

3.2.0. THE PHYSICAL DATA

3.2.1. GEOGRAPHY

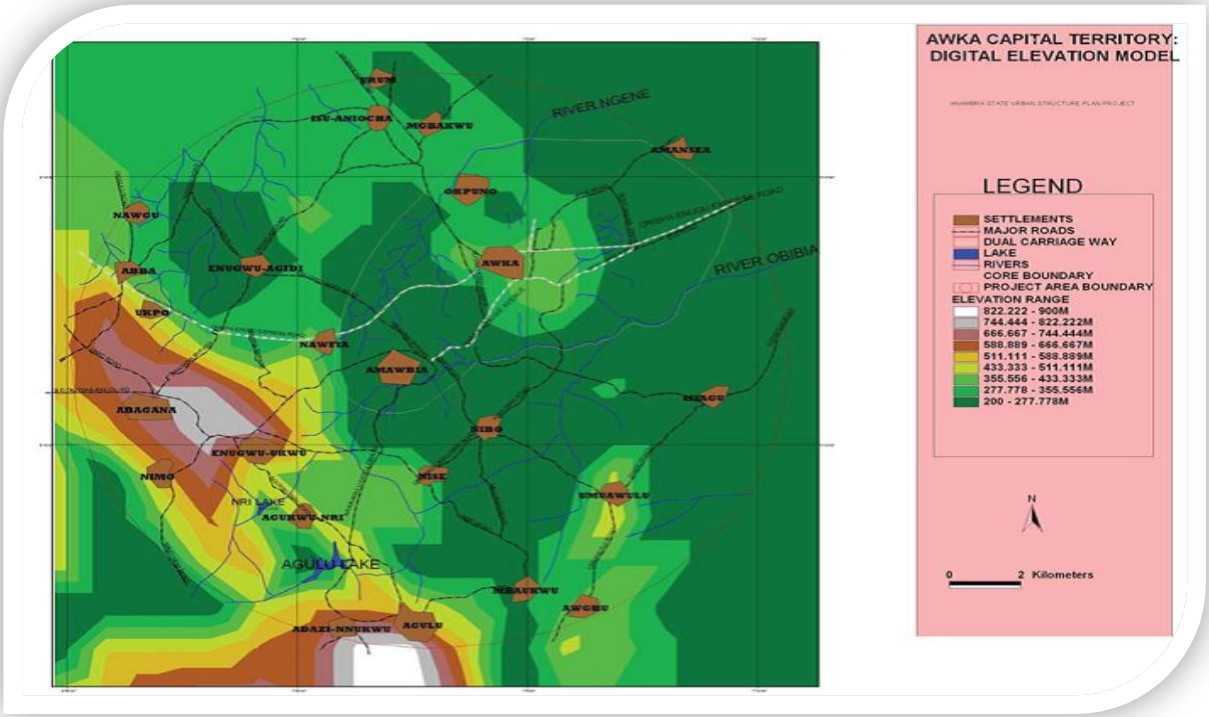

Figure 3.3: Map showing Awka Capital Territory Digital Elevation Model | ***Source:*** *UN-HABITAT, 2009*

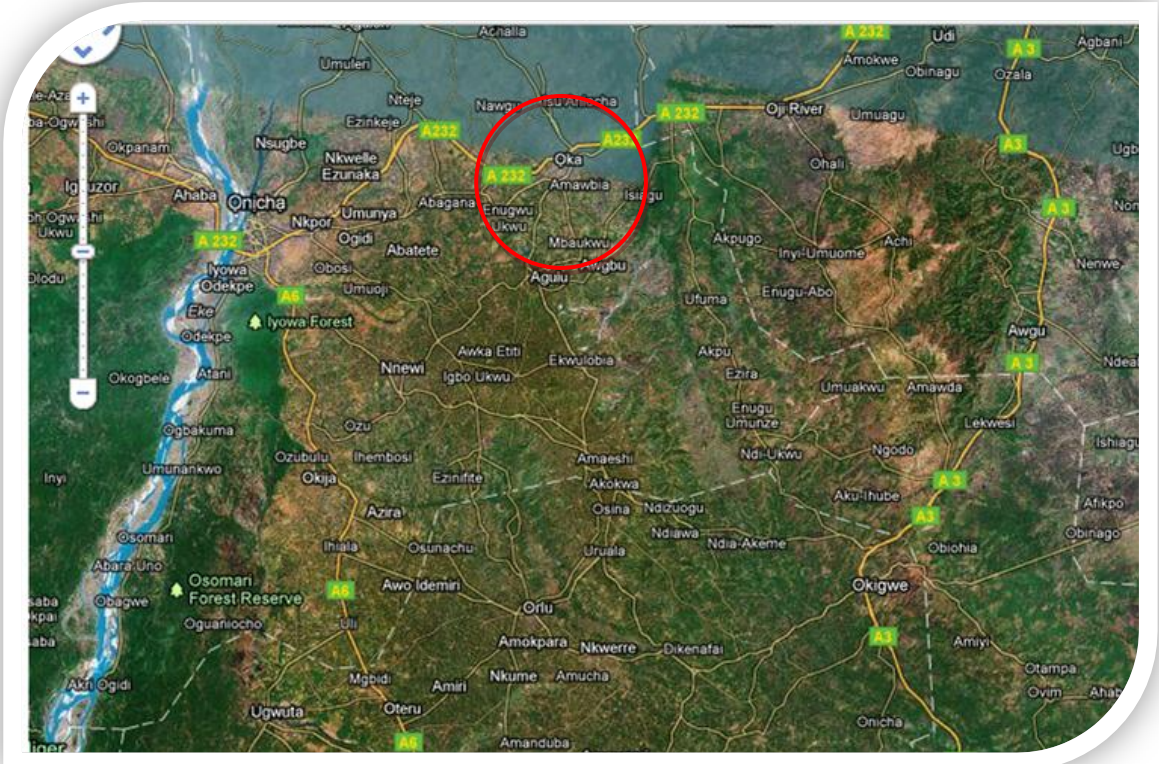

Figure 3.4: Map showing Awka capital territory showing the proposed area, Awka location.

Source: *Google earth (2061)*

Awka lies below 300 metres above sea in a valley on the plains of the Mamu River. Two ridges both lying in a North-South direction, form the major topographical features of the area. The ridges reach the highest point at Agulu just outside the Capital Territory. About six kilometres east of this, the minor cuesta peaks about 150 metres above sea level at Ifite–Awka.

3.2.2 GEOLOGY AND SOIL

Two geological formations which underlie the Awka capital are Imoshale and Bende-Ameki formations. For Imoshale, its main rock types are fine texture, grey clay shale, which predominates, occasional clay iron stone and bands of sandstone. On the other hand, the Bende-Ameki underlies the west of Awka capital territory.

The sandstone quarries north-west of Abagana Rest House yield construction stones of various sizes, ranging from those of 15cm cement block size to 2.5cm and 1.5cm chippings for concrete mixture. In the riverine and the lowline areas, the underlying impervious clay shells cause water logging of the soil during the rainy season. These are areas of Hydromorphic soils. The soil is fine sandy loam; the top layers 0 – 20cm are faintly mottled, orange, loamy clay, while the subsoil layers below 35cm are strongly mottled and spotted and contain stiff grey clay. Close to the top of the rivers, the soils has forest vegetation, but on the lower plains further away from the river, they maintain good grass cover.

3.3.0. SITE SELECTION CRITERIA

The location of the children edutainment and exhibition center is critical to a child's safety, well being, and quality of care. Location requirements can be grouped according to the following broad categories of mandatory and recommended criteria: enrollment, space, environment, safety, security, accessibility, and historic preservation. The selection of a suitable site for an architectural project is very important as the choice of the site will not only affect the viability of such project but also the design of the building. Hence, for any design to be effectively carried out, a study and subsequent analysis of the site becomes one of the prerequisites. This will enable the designer come up with a design that will suit the climatic, physical, socio-cultural and physiological requirements of the site as well as agree with the existing ordinances.

According to Lawson (2000), the spatial organization of a facility meant for a facility as this must consider the site variables (size, shape, contours, orientation, views, and natural features). The following factors are the site selection criteria considered in selecting the site for this scheme.

- Location
- Accessibility
- Physical features
- Future Development
- Statutory requirement
- Infrastructure

A. Location

The location of a scheme of this magnitude must as much as possible meet one or all of the requirements of the determinants of form-manageability, efficiency and flexibility. The location as a criterion is of paramount importance to the feasibility of any project; as this would either enhance or hinder its acceptability to its potential users. The neighborhood must thus influence the suitability or viability of the site of the project. A central location will be advocated for. However, Lawson (2000) opines that the choice of location must be considered in relation to the compatibility of facilities and services in the immediate environment of the proposed site and its proximity to existing hotels. The location of the site should thus be in an area that would help aid quick development.

B. Accessibility

Accessibility, which is the ease with which the complex can be easily reached by both pedestrian and motorists, is a major criterion in selecting a suitable site for this project. The site chosen must thus have access to good roads.

C. Physical Features

The nature of the site must not be overlooked as such features may either count as a merit or demerit to the development of the site. Sites where the natural features pose a danger or are prone to environmental hazards should be avoided, whereas sites where the natural environments are favorable should be considered, as such features offer potentials and could be incorporated into the overall design (Lawson, 2000). Since the building and the site on which it sits is meant to be organic, the site chosen for the project should possess some natural features like slopes, adequate vegetation, a water body (if possible), rocks, e.t.c. The physical features of the selected site such as topography, noise, drainage, soil, vegetation, size, e.t.c, should be favorable for the envisaged project.

D. Future Development

The development of the site should be relatively cheap. Thus, it is necessary to consider physical constraints, possible environmental hazards as well as the maintenance of the site. The site should also be large enough to accommodate possible future development because according to Lawson (2000), expansion potential is one of the principles of spatial organization. The site should also be able to accommodate adequate parking spaces, and other necessary features on the site.

E. Statutory Requirements.

Planning regulations is an important criterion for a scheme of this magnitude. The project must thus commence progress and conclude only if it is in tandem with laid down ordinance and regulation governing any development for that area. Environmental impact results suggests that a site should be located in an area which corresponds to its land use policies and regulations, zoning laws, acceptable noise levels, and functions.

F. Infrastructure

Social amenities and services should be located on the site or should be within easy reach. These services includes; electricity, water supply, fire services, security, e.t.c.

3.4. SITE OPTIONS AND CHOICE OF SITE

Two sites were considered for the location of the conference centre. They include:

A. **Site A**

Site B is located within the executive business district of Awka. The site is one of the approved public use plots and is adjacent to the C.B.N site along the Enugu-Onitsha expressway.

B. **Site B**

This site is located few metres away Alex Ekwueme Square. It is accessible through Alex Ekwueme road and also accessible from the Aroma junction through the Anambra state secretariat.

SELECTION CRITERIA	MAX. ATTAINABLE SCORE(%)	SITE A	SITE B
LOCATION	20%	14	15
ACCESSIBILITY	20%	15	16
PHYSICAL FEATURES	20%	13	13
FUTURE DEVELOPMENT	20%	14	18
INFRASTRUCTURE	20%	15	15
TOTAL	100%	71%	77%

Table 3.2: Showing the site selection criteria | ***Source:*** *Author illustration (2016)*

From the above comparative analysis, site B, with a total score of 77 is the most suitable site for the Children Centre.

3.5.0. SITE CLIMATIC STUDIES AND IMPLICATIONS

The site falls under the sub-equatorial south of the warm humid climate, which is a characteristic feature of Awka. It can be thus said to have two seasons: The long wet season, which starts mid March and lasts till July; the short dry season also known as the August break, which starts in July and lasts for about a month; the short wet season, is follows the august break and last from September to October and; the long dry season (the harmattan), which continues from November to mid March.

3.5.1. TEMPERATURE

The average daily temperature throughout the year is 27°C at Awka. The highest temperature is usually recorded between February and April. It does not however exceed 35 °C; the mean temperature is recorded as 21°C and may occur from June to October (Weather in Africa, Nigeria, Anambra State, Awka Weather and Climate, 2016).

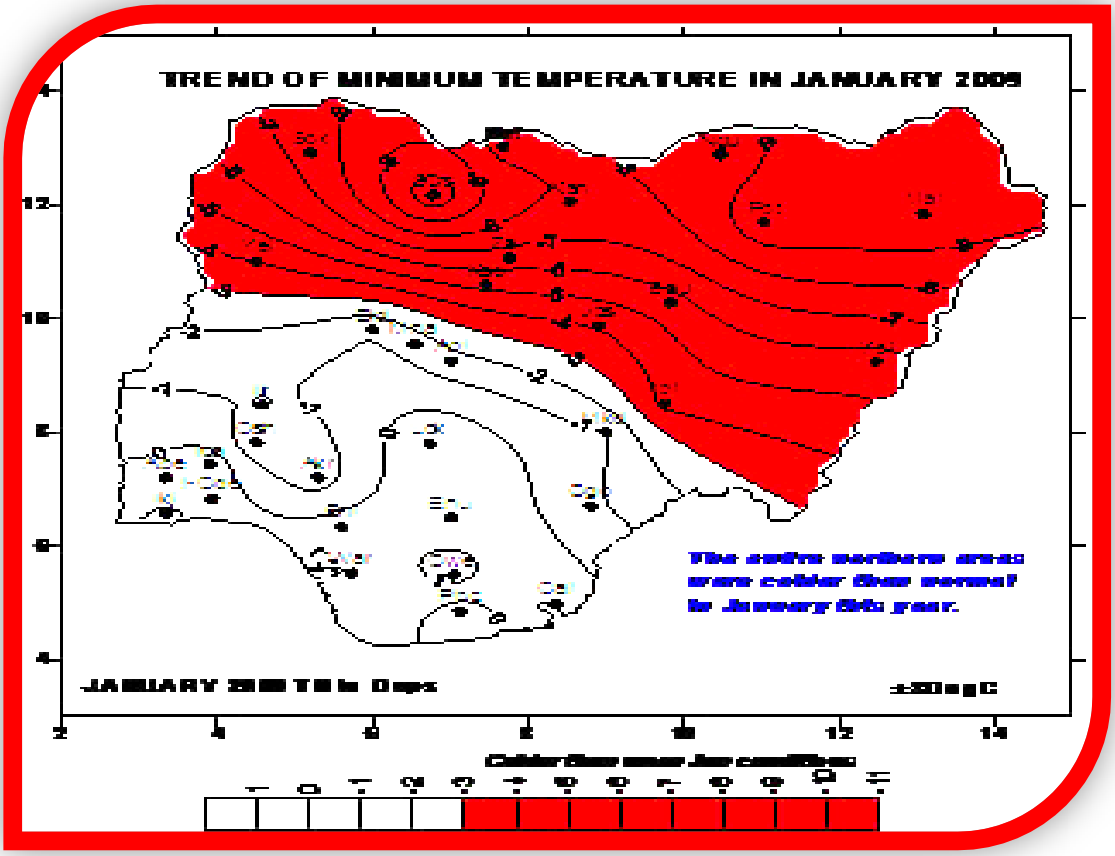

Figure 3.5: Trend of minimum temperature in January, 2016 | ***Source:*** *http://www.nimetng.org*

Implications for the Design

Temperature analysis presents the designer with the challenges of adequate thermal control methods. The implications of temperature on the proposed design include:

- The building should be well ventilated to tackle the problem of discomfort at periods when temperature is at its peak.
- Buffer zones will be provided to provide shade for outdoor activities.

3.5.2. RAINFALL

Awka and its environs lie within the tropical rainforest belt of Nigeria. Rain usually begins in April and generally ends in November with exception of some years when it comes earlier. Mean annual rainfall is between 1750mm and 2000mm with four months recording less than 6omm and the driest month recording less than11mm (Weather in Africa, Nigeria, Anambra State, Awka Weather and Climate, 2016).

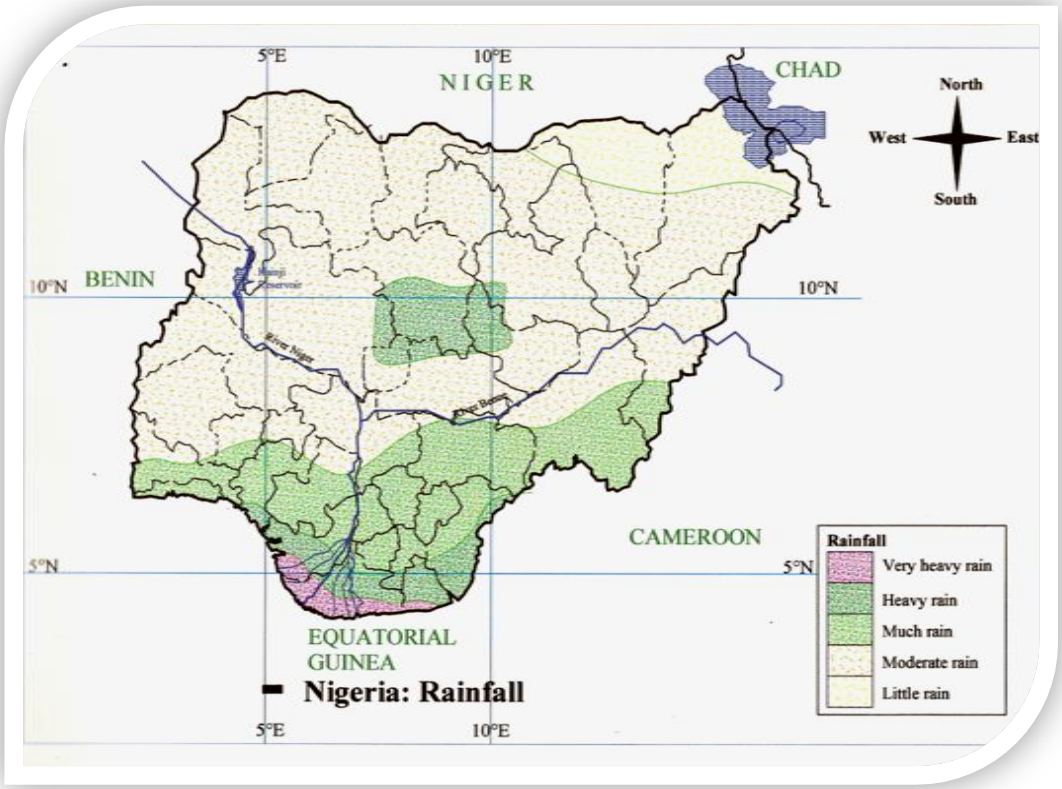

Figure 3.6: Map showing rainfall in Nigeria | ***Source:*** *Google image (November, 2016)*

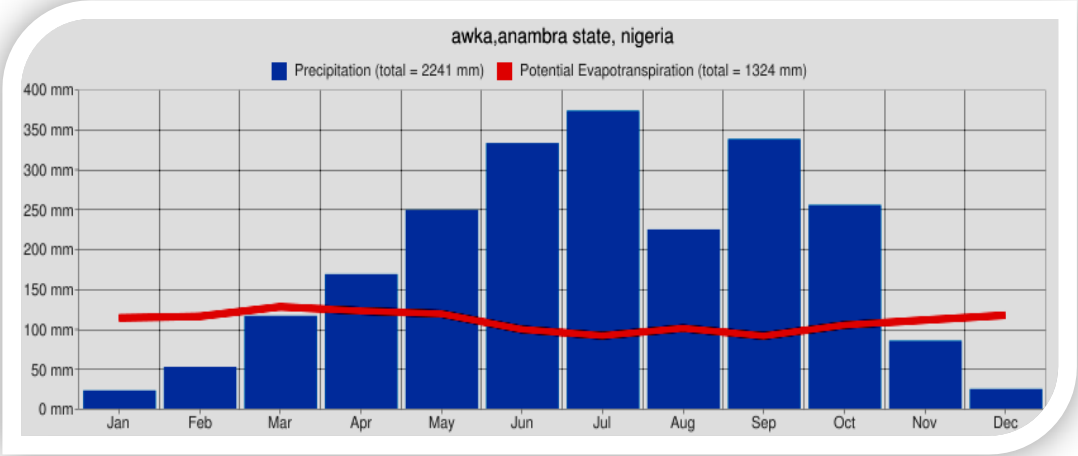

Figure 3.7: Average precipitation and potential evapotranspiration (in mm) | ***Source:*** *Google image (2016)*

Implications for the Design

To check the effects of rainfall in the proposed design, the following measures were taken.

Building floor levels will be raised above the ground level to avoid over flooding.

Provision will be made for adequate over hangs to protect the building during rainy season.

There will be adequate provision for surface water drainage to avoid flooding and marshy environment. Roofs to be made sharply sloping.

3.5.3. WIND

Two major winds are prevalent in Awka: the Northeast and Southwest trade winds. The Northeast wind blows over the region from Sahara Desert and is characterized by its cold, dry and dusty nature. It is also known as the harmattan and usually occurs between December and February. The southwest trade wind blows across the Atlantic Ocean and brings rain and comfort to the area. An average monthly Speed is recorded as 9km/hr for the harmattan season.

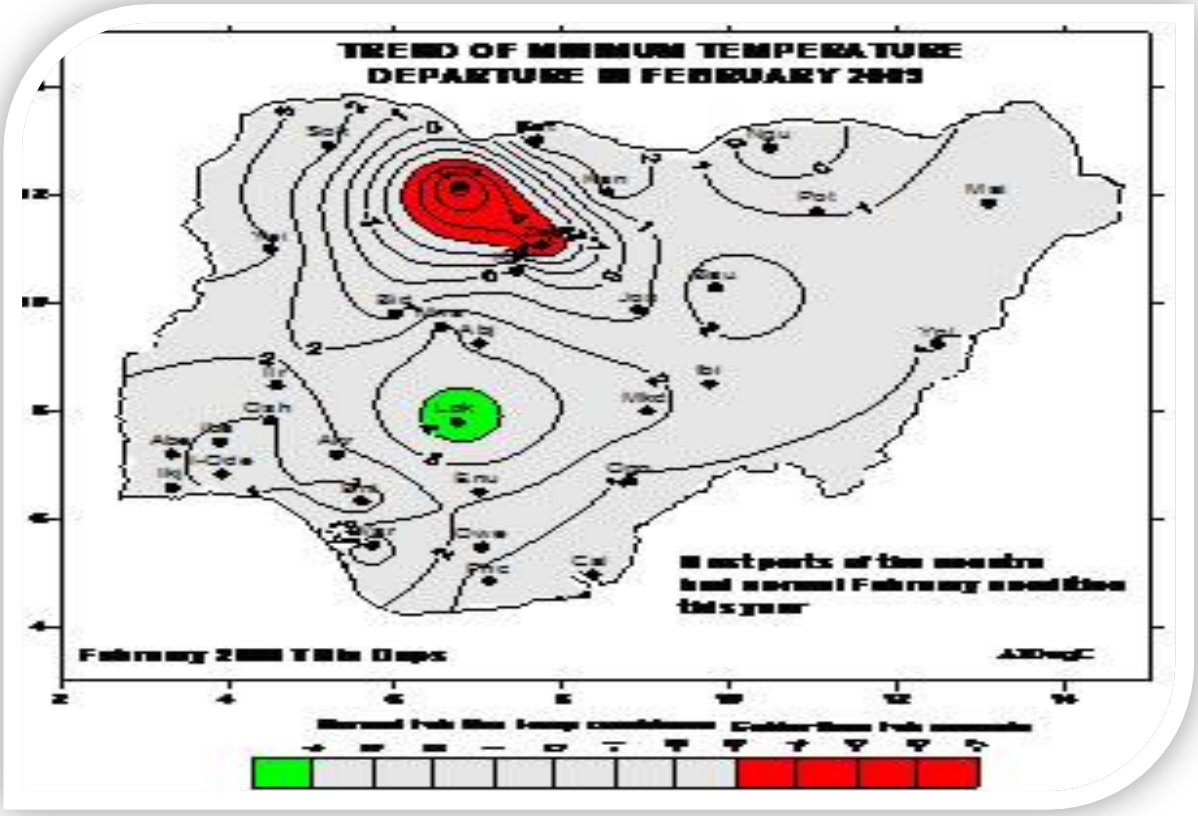

Figure 3.8: Trend of minimum temperature the southeast of the country in February 2016.

Source: *Google image (2016)*

Implications for the Design

Wind data help in the orientation as well as zoning of buildings on site. It is also a determinant of the landscaping pattern in the site. The following are the implications the prevailing wind in Awka will have on the proposed design.

- Considerations will be given to the sizes and positions of fenestrations
- Use of trees as windbreakers
- The building construction will be sound enough to withstand wind effects.

3.5.4. RELATIVE HUMIDITY

Humidity in Awka is relatively high. The relative humidity is generally around 70% to 80% throughout the year with its average at 72%. The peak occurs during the wet season while the influence of the dry harmattan northeast trade wind reduces the humidity to 68% in the month of December

Implications for the Design

Data on relative humidity becomes important to the architect in solving comfort problems in the interior as high relative humidity causes discomfort. To avoid this, the following measures must be met. Adequate ventilation should be provided to ensure the comfort required in a given space by proper orientation and location of fenestrations.

Where steel frames or components are used, coating will be done while all woodwork will be properly treated to avoid attacks by termites (Weather in Africa, Nigeria, Anambra State, Awka Weather and Climate, 2016).

3.5.5. SOLAR RADIATION

Sunshine in Awka varies with the season and cloud coverage. Consequently, low sunshine is registered in Awka and its environs during the rainy season due to the predominant cloud coverage, and relatively high during the dry season. (Source; Awka structure plan project, 2009). The horizontal and vertical angle of the sun's position can be determined for any day of the year and time of the day from the sun path diagram. The four main channels of radiant heat transfers affecting building are in order of importance, direct short wave radiation, the heated ground and near objects. Radiant heat affects buildings in two ways:

- Entering through windows or openings and heating the building interiors.
- Being absorbed by the building's outer surface and thus transmitted to the interiors.

Implications for the design

- Excess and direct sunshine, which causes discomfort, will be minimized by:
- Proper orientation of the building.

- Use of sun shading devices like vertical or horizontal fins to protect the building from direct solar radiation.
- Use of non-heat absorbent construction materials.
- Use of trees, shrubs, hedges, roof gardens e.t.c. to regulate the microclimate of the immediate surroundings.

3.6.0. SITE PHYSIOLOGICAL AND GEOLOGICAL ANALYSIS

3.6.1. VEGETATION

Awka is sited in a fertile tropical valley but most of the original Rain forest has been lost due to clearing for farming and human settlement. A few examples of the original rain forest remains at places like the Imo - Oka shrine. Wooded savannah grassland predominates primarily to the north and east of the city.

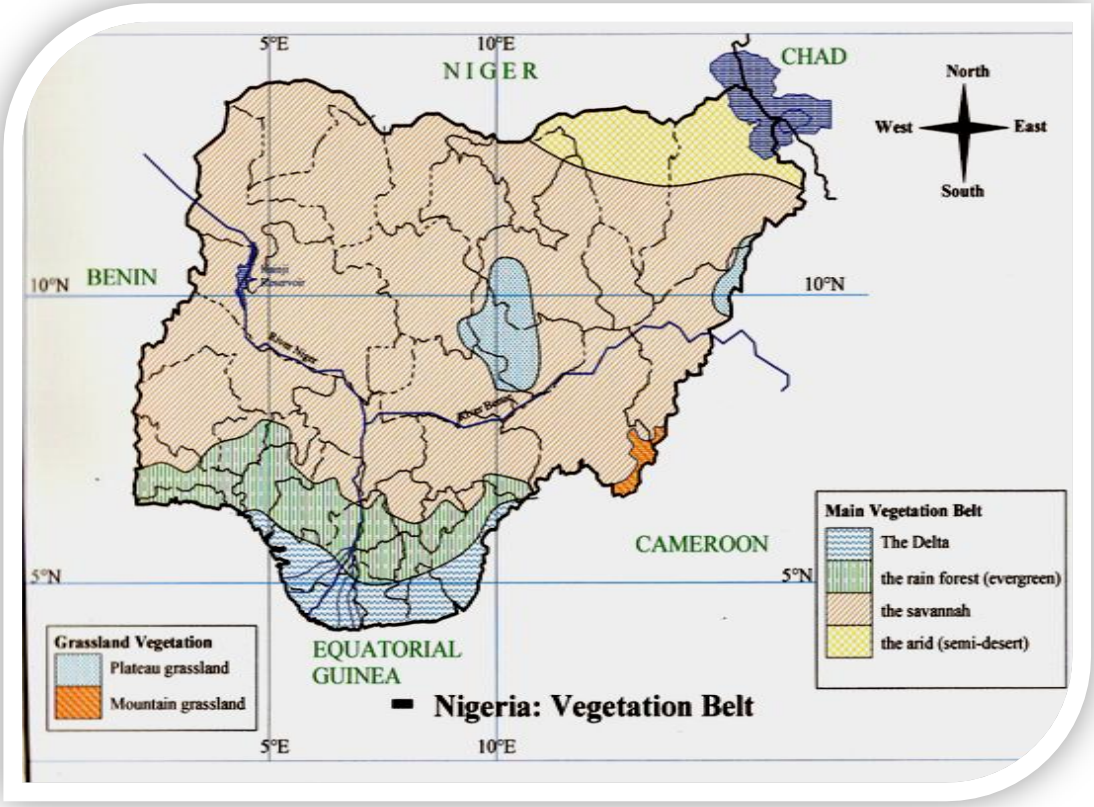

Figure 3.9: Map of Nigeria showing the vegetation belt | ***Source**: Google image (November, 2016)*

Awka is within the high forest belt. In its original form, the high forest comprises tall trees with thick undergrowths and numerous climbers. The typical trees are deciduous in character,

shedding their leaves in the dry season in response to the significantly diminished rainfall. Such trees include the Iroko, Silk cotton, and Oil bean tree. Oil palm and raffia palms, which are not necessarily deciduous, are common. Due to incessant interference of the natural environment by man, the original high forest is rare to come by. It is only in such carefully preserved areas as shrine forests e.g. Nimo and along stream courses as in Amansea, can one see some semblance of the original high forest. Elsewhere in the territory, continued clearance by man has left the original forest replaced by grass of secondary forest compromising mainly selective preserved economic trees such as oil bean trees, kola nut trees, Iroko trees (hardwood timber) silk-cotton trees (for soft timber) mango trees and palms.

Implication for the Design

The natural foliage would be retained where necessary. i.e, palm trees, and other species of trees found on the site would not be removed. Those posing potential obstructions to the building would simply be transplanted. This effort is to ensure that the natural environment is preserved through every possible means.

3.6.2. TOPOGRAPHY

Most of the territory lies below 300metres above sea level on plains of the Mamu River. This portion is fairly level and tilts very gently towards the Mamu. Two ridges both lying in a North-South direction form the major topographical features of the area. The higher ridge reaches its highest point at Agulu outside the capital territory. About six kilometers east of this, the minor ridge peaks about 150meters above sea level at Ifite-Awka. The plain surrounding this portion hosts the Awka, Amawbia, Umuokpu, Nibo, Mbaukwu and Umuawulu towns. Sections through the proposed site shows a relatively slopy terrain. The site slopes gently towards the North-west axis.

Implications for the Design

Ramps and steps would be used to manage the slope to enhance the comfort of the users. Expansion joints would be used to manage uneven settlements.

False slopes would be created on the site to give the site that look, rhythm, and drama characterized by organic architecture.

3.6.3. ACCESSIBILITY

The site is easily accessible from Onitsha-Enugu Express Road through the Secretariat Road or Alex Ekwueme Road along the western axis of the site. Major access into the site will be from the western side of the site while service delivery into the site will be from the Northern axis of the site.

3.6.4. NOISE

Major source of noise into the site is from Alex Ekwueme Road from the west part of the site and the Secretariat Road from the eastern part of the site. This menace can be reduced by shielding the source of the noise.

3.6.5. RELATIONSHIP BETWEEN THE SITE AND SURROUNDING ENVIRONMENT

The site is located within the executive business district, and thus would have many government owned establishments or structures as its neighbours. These renowned structures include: The cenotaph parade ground (Alex Ekweme square) which is visited by many people on daily basis, the state secretariat, Government house complex, Judiciary building and Legislature building These structures would help boost the rate at which people would visit the centre, thus ensuring more revenue generation and hope of future expansion.

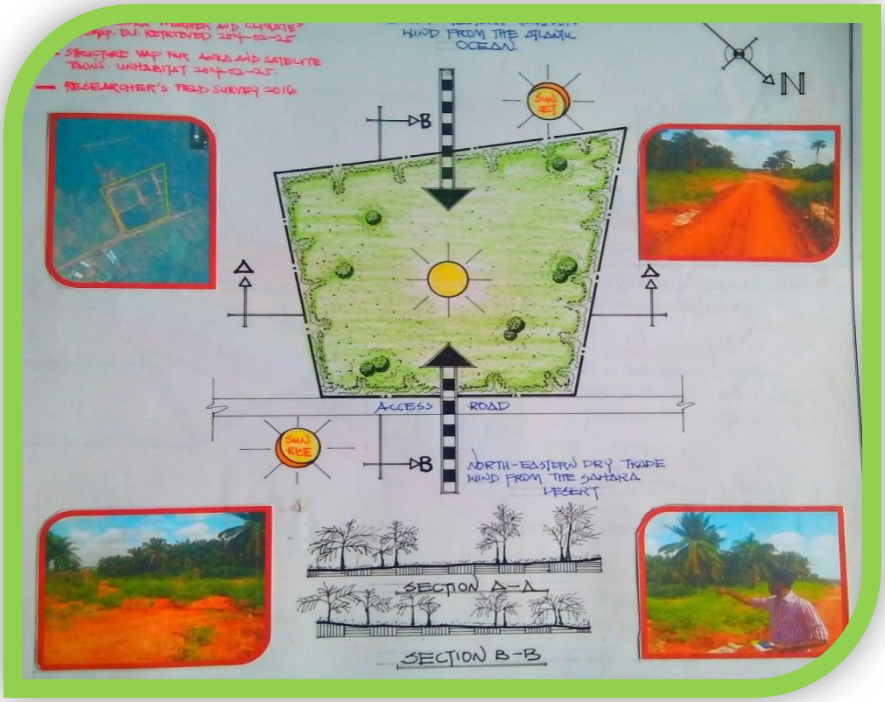

Figure 3.10: Diagrammatic illustration of the site showing its access routes, contour, and other features | ***Source:*** *Author's Illustration (2016)*

3.7.0. DESIGN CONSIDERATIONS

To achieve an effective spatial organization of spaces in designing a children centre, several technical and anthropometric data have to be properly considered and adopted in the design of the various spaces. This would ensure the efficient and optimized usage of spaces. The general principles here are to ensure comfort with respect to ventilation, lighting durability, cleaning and maintenance, and most importantly, spatial organization criteria such as accessibility, circulation, acoustics, safety, etc. Irrespective of space or use, the proper handling of these factors will determine the ability of the centre to serve its purpose effectively. The centre should be efficient, friendly, and should be a good neighbor to surrounding structures in the vicinity. The factors to be considered include:

3.7.1. LOCATION AND ACCESSIBILITY

The location of the children center is critical to a child's safety, well being, and quality of care. The children centre should be located in a place that is large enough to provide spacious and safe external public circulation and activity areas and space for service vehicles and functions. It should also allow for future development and should be easily accessible to the children, parents, administrators, service personnel etc. In general, the centre should be easily accessible by all the users.

3.7.2. SECURITY AND SAFETY

The purpose of designed security measures is to keep the children safe within the centre, to safeguard them from outside intruders, and to protect them from hazards to the fullest extent possible. Security systems equipments may include, but not limited to, perimeter alarm systems, video surveillance for main entrance doors. The design of the building must be carried out such as to maximize the safety of all. This criterion applies to exhibitors, visitors, exhibit constructors, transporters, management and staff of the children centre, and the public in general.

All materials and systems used in the facility should be intrinsically safe. Hazards that should be considered amongst others are;

- Emergency escape routes
- Overcrowding
- Slipperiness of the floor
- Vehicular traffic control

- Suspension of objects from the ceiling
- Fire
- Dangerous chemical usage

3.7.3. LIGHTING AND POWER SUPPLY

A basic requirement for a children centre design is lighting and power supply. Well-considered lighting for each activity area is a key element in creating the "home-like" environment for the children. The quality of light should remind children of a residential environment. It should be utilized to emphasize areas.

Generally, Lighting is seen as letting in light into a space to aid vision. It is a matter of common observation that up to a point, the more the available light, the better we see.

Lighting is an integral part of architectural design of buildings. It determines, to a large extent, the utilitarian as well as the aesthetic environment provided by the designer. Consequently, it calls for the most careful planning and the highest skill of the architect.

The function of a building will determine the amount of light required. Different building types and different area of buildings require varying amounts of light. Broad ambient lighting is most appropriate for large motor activity spaces; task lighting is required for manipulative activities; lower light levels are needed for quiet and sleeping areas. Some require lots of natural daylight, while others rely more on artificial lighting. In Nigeria here, the sun is the natural source of light while electricity is the major source of artificial lighting.

Natural Lighting

Natural lighting or daylight is a variable source of light due to the constantly changing position of the sun. To light an auditorium space naturally, one must consider the orientation of the site and the building in relation to the path of the sun, the prevalent climate of the site, and the different ways and means of letting daylight into a space. There are three basic ways of day-lighting any space.

Lateral Lighting: This entails day lighting through normal windows and doors that are introduced into vertical walls. It usually combines natural lighting with natural ventilation, and it allows for views of the exterior environment. This form of lighting is generally suitable for all spaces, except in rooms meant for storage of artifacts.

Artificial Lighting

Artificial lighting comes from artificial light sources and it is a critical design issue. It is a widely used form of lighting for interior and exterior spaces. This is because unlike natural lighting, artificial lighting can be completely controlled by the architect in the design as it allows for control in the areas of illumination in a building space.

Artificial lighting is could be used for both the interior spaces and exterior facades of a building. In both cases, the level of luminance can be varied to provide interest and compel attention. (Lawson, F.R, 1981) is of the opinion that by varying the relative luminance (of ceilings and walls), architectural features may be emphasized or visual faults in the space corrected.

3.7.4. ORIENTATION AND VENTILATION

The building should be oriented in such a way that it could benefit from the natural means of ventilation and lighting. This would help reduce energy costs in running the building. To provide a comfortable working environment within buildings, there has to be constant removal of air. This is to expel stale air and replace it with fresh air. This process of ventilation can be carried out naturally and artificially. However, it must be stated that natural ventilation is not quite suitable for best acoustical conditions.

Natural Ventilation

Natural ventilation occurs when advantages of air movement in nature are made use of. The prevailing winds over the site are admitted into the building through windows, doors, screened walls or other air inlets and released through the same apertures. To achieve good natural ventilation, the building is oriented to make maximum use of the prevailing winds.

Here in the tropics, natural ventilation cannot be compromised in designs of public buildings. More so in Nigeria where dependence on the epileptic public power supply would make the building unusable in cases where a back up supply of power is not available.

The desired effect of ventilation within a space can be achieved by the manipulation of certain determining factors like the size, position, and type of window and door openings.

Artificial Ventilation

This involves the use of mechanical devices such as air conditioning units, exhaust fans, ceiling fans, et cetera, to effect or force the admission and removal of air from a space. The use of these devices is to make effective what natural ventilation might not achieve

effectively. Engineers estimate that for adequate ventilation, the entire air in a room should be changed completely from one and a half to three times each hour, or that about 280 to 850 liters (about 10 to 30 cubic feet) of outside air per minute should be supplied for each occupant. For multipurpose hall where a large number of people are regularly confined in a space for a long time, providing this amount of ventilation usually requires mechanical devices to augment the natural flow of air. It is worthy of note that artificial ventilation detracts from best acoustical conditions as the machines may generate some amount of noise. However, care should be taken to ensure that they run as quietly as possible. Also, the power generating plant should be remote from the auditorium to avoid noise transmission.

3.7.5. AESTHETICS AND DURABILITY

The façade of the building should be distinguished by a simple balance of line and proportion and by its functional character. The building should be beautiful, while clearly portraying beautiful colours that attract children. The design elements should be colourful as well to reflect a children facility. The site on which the building seats on should be well planned and landscaped to create a lasting impression on the minds of the users.

The structure should be designed to have a minimum standing life of fifty years, with a minimum period of first major maintenance of coating and finishes of fifteen years. The design for durability of the building elements shall be governed by intended usage and exposure and shall be assessed in accordance with relevant building codes.

3.7.6. THE PHYSICALLY CHALLENGED

Public facilities like this one must be designed to be accessible to people with disabilities. To encourage them, there should be provision of a continuous accessible path of travel to the area and to facilities in the children centre. Ramps would be provided at all entry and exit points. They should be able to make use of the entire facility as much as possible like others. To achieve this, ramps should be introduced as an alternative to stairs where they occur. Ramps should not be longer than 4.5 m or steeper than 8.5% and should have an angle of inclination of not more than 6˚. Lifts could also be introduced, if possible, for vertical circulation.

3.7.7. TECHNICAL CONNECTIVITY

Technology has become an indispensable tool for business. Safety of the children and their electrical needs must be considered in the design. All data, equipments, and communication requirements must be defined in advance to prevent inadequate facilities. Plan spaces to have a distributed IT infrastructure within the children's centre.

Given that technology is driving a variety of changes in the organizational and architectural forms of buildings, consideration are given to the following issues when incorporating it, particularly information technology (IT), into an office:

- Plan new architectural buildings to have a distributed, robust, and flexible IT infrastructure, which would allow technological access in virtually all the spaces. During the planning stage, identify all necessary technological systems (e.g., voice/cable/data systems such as audio/visual systems, speaker systems, Internet access, and Local Area Networks [LAN] / Wide-Area
- Networks [WAN] / Wireless Fidelity [WI-FI]), and provide adequate equipment rooms and conduit runs for them.
- Consider and accommodate for wireless technologies, as appropriate.

3.7.8. COST AND COST EFFECTIVENESS

The size and level of comfort of a new children edutainment and exhibition centre will always be governed by the financial resources available. Children centre developers must ensure that there is sufficient fund available to achieve what is necessary for the centre if not it should not be started at all. The centre should be evaluated using life-cycle economic and material evaluation models. Value engineering provides a means for assessing the performance versus cost of each design element and building component.

In the design phase of the building development, properly applied value engineering considers alternative design solutions to optimize the expected cost/worth ratio of projects at completion. Value engineering elicits ideas on ways of maintaining or enhancing results while reducing life cycle costs.

3.7.9. FIRE PROTECTION AND MEANS OF ESCAPE

The design of a children centre should incorporate features to protect against fire outbreaks. Such may include fire automatic detection systems, fire alarms, sprinklers as well as fire extinguishers at strategic locations. Also, steel members prone to fire damage must be coated

with fire retardants to protect them from destruction in an event of fire outbreak. Emergency exits and routes should be provided to evacuate the children and their care givers from the structure within a short time in case of mayhem.

3.7.10. PARKING, LUSH VEGETATION AND LANDSCAPE

Parking spaces should be located with the shortest accessible route of travel from the parking area to an accessible entrance and an accessible pedestrian entrance of the parking area.
If the facility has multiple accessible entrances, accessible parking spaces should be dispersed and located closest to the accessible entrances. Accessible parking spaces should be at least 2.5 meters wide. Parking lot (or lots) should be large enough to accommodate one car for every three visitors. It should be designed to permit convenient and speedy exit after any performance, with good access from traffic routes. The parking area should be surfaced with gravel or asphalt and provided with good drainage under all conditions. It should also be well lighted for ease and security in parking and walking in case of periods when the centre would be used at night.

Landscaping should be integrated with the design of the development and complement the landscaping of adjoining public places. All plant materials must be non-toxic. Categories of plant hazards include berries, thorns, and plants with toxic leaves, stems, roots, or flowers. Established canopy trees should be retained, protected and incorporated into the landscaping of the site. Additional canopy trees should be planted, wherever practical, to provide shade and visual interest. Paved area on the site should be reduced as much as possible. Plant materials should be used to bring natural elements to the play yard environment.

The atmosphere of the center can be enlivened by the color, texture, sound, and motion of plant materials. Children's ability to observe plant growth is programmatically beneficial. Plant materials that display seasonal changes are desirable. Visual barriers, screens, and shade and wind protection can be created using plant materials in preference to, or in conjunction with, man-made structures. Plant materials should be used to define interesting play areas. Avoid trees with low hanging limbs if children can use them to climb to unsafe heights or to scale fences.

3.7.11. WATER BODIES (POOLS AND WATER FOUNTAINS)

The site does not have naturally existing water bodies either on the site or very close to the site, but the concept of organic architecture involves the use of natural features like lakes,

ponds, streams, and other related water bodies to enhance the communication between man and his immediate environment. Thus, water fountains and artificial ponds would be used to enhance the organic nature of the building and the site as a whole.

In constructing artificial ponds, it is necessary to consider the soil, the depth of water necessary to create the required effect, and the total cost of making such construction. An artificial pond could be made to look very natural by introducing aquatic organisms like fishes and water plants e.g. water lilies.

3.7.12. ARTIFICIAL ROCKS

Large boulders are commonly used as focal points in gardens, but the size and weight of boulders makes them difficult to move. Artificial rocks provide the same look as a real rock, but many are hollow or made from lightweight materials to reduce the weight. Artificial rocks can be made from cast concrete, fiberglass or high-density polymers that look as authentic as natural stone. Creative landscaping around the rock makes it difficult to tell that rock is fake. If the rocks are hollow, they can be used to conceal pipes and other utility equipment on the site.

Where required, soil can be heaped around the rock or bury up to one-third of the fake rock in the ground to make it look like part of the natural landscape. Small or native trees, and ornamental grasses, should be planted behind the artificial rocks to act as a backdrop to blend the rock with natural landscaping features. It is essential to select dwarf trees that won't overwhelm the space, such as a citrus tree, trident maple (Acer Buergeranum) or pygmy date palm (Phoenix Roebelenii). Examples of native grasses to consider include pacific dune sedge (Carex Pansa), canyon prince giant wild rye (Leymus Condensatus "canyon prince") and onion grass (Melica Californica), e.t.c. The trees and flowers should be planted closely together so they conceal the point where the fake rock meets the ground. Native, drought-resistant plants work best because they require little maintenance and can tolerate the higher heat and dry conditions that are typical around rocks.

3.7.13. PLAY YARDS FOR DIFFERENT AGE GROUPS

<u>Infant Outdoor Play Areas:</u>

Play areas for infants require special design considerations. Separate spaces for infants should be near toddler play areas, providing visual and audible connections and limited physical

contact. Ideally, infant play areas should be exposed to the natural environment, though shielded from the extremes of wind and sun.

Infant play area surfaces should consist of soft, resilient materials that protect crawling children and provide a comfortable surface on which they can sit. Soft surfaces should have different textures and (not garish) colors denoting changes in activities and challenges. Developmentally appropriate challenges should be situated within bounded areas or behind slight barriers requiring mastery before the child may venture into the next area. These challenges could take the form of crawling spaces with slight inclines or undulations, low, easy to cross barriers or berms, pull up bars, and low platforms and slides. There must be some surface that is hard enough to allow the use of wheeled and push toys.

Toddler Outdoor Play Areas:

Toddlers should have play areas for walking, jumping, climbing, running, drawing, painting, block play, group play, sorting, and exploring. The toddler play environment should allow for a wide range of movement and stimulate the senses through the novelty and variety of challenges. Simple, versatile climbing equipment is more appropriate for toddlers than scaled down versions of older children's play structures. Toddlers crave and enjoy semi-enclosed spaces such as small play houses or climb-through tunnels. Other favorite play equipment for toddlers includes small slides. Toddlers seek out experiences with motion or movement. All play structures in toddler areas must be surrounded by a resilient surface. A variety of surfaces and materials should be provided including sand and dirt, pavement, and open grassy areas where toddlers can use an abundance of play objects. When combined with toys, sand becomes a major resource for toddler play. There must be hard surface areas and paths that support wheeled toy play. All sand areas require fitted water-permeable covers to deter rodents and other pests.

Pre-School Outdoor Play Areas:

Play areas for pre-school children should support dramatic and constructive/ creative play, active and quiet play, sand and water play, with opportunities to explore nature. Pre-school children regularly interact, socialize, discuss, and negotiate. At this age, they begin to engage in socio-dramatic play. Running, jumping, climbing, and swinging are all important activities, but are often pursued in the context of a make believe setting. A larger, open-ended play superstructure offering many activities should be provided, but be designed to lend itself to dramatic play. There should be elements such as playhouses, stages, and props that encourage

dramatic play. These elements should be positioned within the play area to allow the dramatic play to spill out and flow into other spaces. Pathways for wheeled toys also provide circulation and allow the play experience to flow through the play areas. Where these are not safety surfaces, a minimum of 10mm of impact resistant topping must be applied over concrete. Safety helmets should be required on hard surfaces. Facilities for play with sand and water should be included and placed adjacent to one another allowing these activities to intermingle. Materials for creative play activities such as musical devices, painting materials, chalkboards, construction materials, and blocks also should be included. If there is a covered porch area, it is ideal for painting, drawing, etc. Generally, for best motor activity in a group care setting, the children should be moving, not the equipment. While tire swings are appropriate, standard swings are too problematic in group care to warrant their inclusion. Provide water-permeable sand box covers.

School-Age Outdoor Play Areas:

Play areas for school-age children should be separate, but linked to the play areas of younger children. School-age children must have structures and spaces that allow them to exhibit and practice their more advanced physical and social skills. Running, jumping, and climbing activities are supplemented by more athletic pursuits such as sports and games. Most children of this age have the physical ability to roller skate and ride bicycles. Quiet, semi-enclosed areas should be provided for socializing, completion of homework, or quiet contemplation. School-age children should be exposed to the same activities as the younger children in the center, such as sand and water play, construction activities, music, and artistic pursuits such as drawing or painting. Some playground suppliers have lines specifically geared to this age group which should be referenced for dimensions. Provide water-permeable sand box covers.

3.7.14. COLOUR AND TEXTURE

Both color and texture have a great impact on children. The sense of touch is directly related to cognitive development, and color has far-reaching effects which influence behavior. While cool colors tend to have a calming effect, and warm colors tend to create warmth and excitement, a consistent extreme of either in a center is not desirable.

Use of Color: The overuse of a strong color scheme should be avoided, as this may result in over-stimulated, excited behavior. The predominant color above the level of the wainscot should be neutral and, in general, achieve a reflectance of 80% or greater. Stronger, more

vivid colors with reflectance of 65% may be applied on one wall in corridors and along the rear walls of classrooms (opposite windows). Bear in mind that children's clothing is usually much more colorful than that of adults, and their toys and art add a great deal of color to the environment. Therefore, little "color statement" is required on the part of the designer. Do not use primary colors on walls. Too little color is better than too much in an environment where children will spend a great deal of time. Avoid complex patterns on walls and floor coverings. Select colors appropriate to the activity, using color cues to identify particular areas. Warm (as opposed to bright) hues are preferred, when appropriate.

Use of Texture: the designer should provide a variety of textures on surfaces within reach of children, especially for infants and toddlers. Utilize soft textures whenever possible, especially in quiet or sleeping areas to promote relaxed and quiet behavior. Hard textures are more appropriate for large motor activity areas where livelier behavior occurs. The use of subtle, varied, natural textures is highly encouraged as they are soothing and interesting to children.

3.7.15. CLEANING AND MAINTENANCE

The building should be designed to achieve a clean looking appearance for the period of the lifespan of the building with minimum annual costs for maintenance and given its function as a public building of high usage.

The building materials and design in general should facilitate easy natural or automated cleaning methods both internally and externally. Window cleaning arrangements should be labour saving and effective.

3.7.16. CODES AND STANDARDS

There is an enormous range of criteria, codes, and standards that covers both federal and private sector office building design and construction which must be adhered to strictly to avoid possible problems.

CHAPTER FOUR

4.0. DATA COLLECTION/ GENERAL PLANNING PRINCIPLES

This chapter contains criteria used and for planning and programming the space requirements. Examples of space programs for different center sizes are also provided. Any variances to the mandatory requirements must be approved by the relevant authority. The likelihood of the need for such a variance should be identified as soon as possible in the design process. Typically, this would be at the initial design workshop or during the Prospectus Development Study process. The centre is subject to the state and (if applicable) local childcare licensing requirements. The designer and the user must review these requirements during the initial phases of design so that later redesign is avoided. When there is apparent contradiction, in consultation with the licensing authority, the standards deemed more restrictive shall apply.

4.1.0. ARCHITECTURAL PRINCIPLES OF DESIGN

As William Lidwell stated in Universal Principles of Design, the general principles of design include the following:

I. BALANCE

For a design to be balanced, parts of the design are equally distributed to create a sense of stability. Both the physical and visual balance exists. Types of balance includes; symmetrical or formal balance, Asymmetrical or informal balance (adopted form of balance for organic designs), Radial balance, Vertical balance and Horizontal balance.

Plate 4.1: showing asymetrical balance.
Source: *Google image (2016)*

*Plate 4.2**:** showing symetrical balance.*
Source: *Google image (2016)*

Implications for the Design

Symmetrical balance would be employed in the design of the centre. This would be achieved through the use of both horizontal and vertical features.

II. RHYTHM

This refers to repeated use of line, shape, color, and texture. It involves the repetition of alternating elements at intervals

Four types of rhythm exists. They include; regular, graduated, random, and gradated rhythm.

Plate 4.3: Showing regular rhythm
Source: *Google image (2016)*

*Plate 4.4: Picture showing random rhythm |**Source:** Google image (2016)*

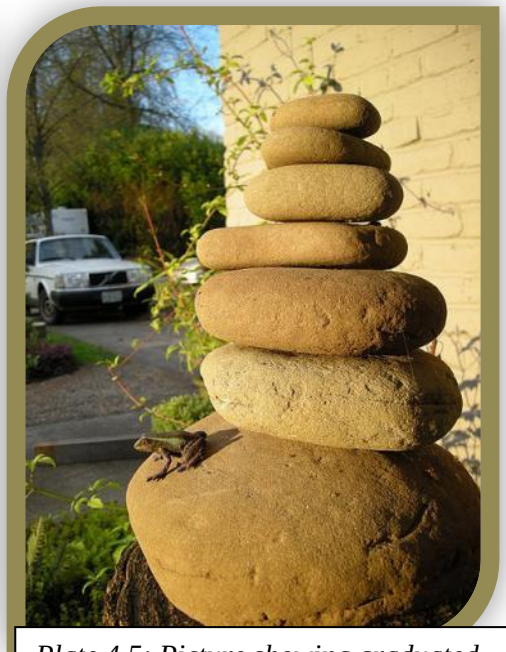

*Plate 4.5: Picture showing graduated rhythm | **Source:** Google image (2016)*

Implications for the Design

The façade of the building would feature various exciting colours and cartoonish images analogous to children. These patterns would be repeated on certain faces of the walls of the building, and this would create a sense of rhythm. Also, the fenestration pattern would go a long way to ensure a culturally rhythmic façade.

III. DOMINANCE/EMPHASIS

Emphasis refers to any feature in a design that attracts one's eyes – the focal point.

Emphasis can be achieved through size, placement, shape, color, and/or use of lines.

Plate 4.6: Picture showing emphasis

Implications for the Design

According to White, Alex (2011), dominance is created by contrasting size, positioning, color, style, or shape. The focal point should dominate the design with scale and contrast without sacrificing the unity of the whole.

Thus, in the design of the centre, the overall heights of different wings of the building would be varied and articulate use of concrete massing and false façade would be employed to achieve a focal point which would ooze dominance.

IV. PROPORTION AND SCALE

This involves comparative relationships between elements in a design with respect to size and how well it suits human beings.

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Plate 4.7: Picture showing proportion &scale | ***Source:*** *Google image (2013*

Implications for the Design

Anthropometrics would be carried out to ensure that the spaces provided would be very convenient for human use and comfort. Considerations would be given to exhibition galleries in terms of exhibit placement, standard requirements for viewing distance, storage spaces, etc.

For the general façade of the building, and in order to achieve a dominating structure, the building wound be relatively large to accommodate necessary functions for the children.

V. MOVEMENT

In design, movement refers to a continuous flow or feeling of action

Plate 4.8: Picture showing movement | ***Source:*** *stockphoto.com*

Implications for the Design

Movement, in this case, is the path the viewer's eyes takes through the exhibitions, often to focal areas. Such movement would be directed through a proper organization of spaces (mainly exhibition areas), use of inter-connecting walkways between different wings of the structure, and use of forms and that would naturally guide the visitors on his/her order of movement.

VI. CONTRAST

Contrast can be created with Color, Proportion and scale, Shape and Texture

Implications for the Design

According to White, Alex (2011), the key to an interesting design is to find the balance between similarity and contrast. Thus; the façade of the building would incorporate both similar and contrasting features to provide a dramatic aura to observers.

VII. UNITY

Unity refers to any feature that makes the disparate architectural parts coalesce as a whole. Unity is achieved by the consistent use of lines, color, material, and/or texture within a design.

Plate 4.9: Pictures showing buildings with elements portraying unity | ***Source:*** *Microsoft, Inc. (2016).*

Implications for the Design

According to Alex White, author of The Elements of Graphic Design, to achieve visual unity is a main goal of graphic design. When all elements are in agreement, a design is considered unified. No individual part is viewed as more important than the whole design. A good balance between unity and variety must be established to avoid a chaotic or a lifeless design. Thus; individual parts of the design would be carefully merged to achieve a structure which would function as a unified whole.

4.2.0. SPATIAL ORGANISATION PATTERN FOR THE CHILDREN CENTRE

To be able to develop an organizational pattern for a design program, sometimes, it helps to draw attention to the functions to be performed by the users. This will reveal the set of activities organized in a defined hierarchy that will offer a clue to what might be the best organizational solution to the given circumstances.

For this design, some spaces (e.g. multipurpose hall) have a higher frequency of use than others, and thus should be strategically placed to avoid overcrowding in the facility in case of peak periods. In order to integrate the building with the natural environment, open courtyards would be provided in some spaces, while incorporating interconnecting walkways to the design, so the building can function as one complete edifice. The building would be zoned in such a way that noise generated from spaces such as the playgrounds would not interfere with other activities in the building.

4.3.0. SPATIAL REQUIREMENTS

4.3.1. PUBLIC SPACES

In planning children centers, particular attention must be given to the following public spaces:

A. Main Entrance

The appearance presented by the main entrance and its approach is important since it tends to typify the children centre. The main entrance is visibly defined, easily identifiable and leads straight to the reception.

B. Reception Hall

The reception hall forms the nucleus of circulation and this area more than any other, tends to create the first and usually the most prominent impression of any building. The idea here is for circulation to be easy and not congested but to also create an atmosphere of anticipation and excitement. For this design, a combination of a large circular indoor-outdoor children playground and lobby was achieved and is generally desirable in the centre. The aim is to create an impression of spaciousness whilst enabling the whole area to be used as fully as possible for various functional purposes. The size of the reception hall is dependent on the type and size of the children centre and, to a large extent, the number of users expected to use the centre at once.

C. Circulation Lobbies.

The essence of these spaces is to serve as a transition space between different spaces contained in the building, and to ensure that there is continuous and unobstructed movement. The building houses a multipurpose hall of 300 sitting capacity, a restaurant of more than 100 users per seating, amongst other functions, and thus is expected to experience a steady influx of people at all times. For this reason the circulation lobbies would be wide enough (not less than 3000mm wide).

D. Sanitary Facilities (Conveniences)

According to Lawson (2000), the demand of conveniences is usually at its peak in the commencement and end of session and equally during breaks. Adequate conveniences will thus be provided to take care of the intended capacity of participants.

4.3.2. ADMINISTRATIVE FACILITIES

The administrative department in the children centre is in control of the organization and running of the centre. This department ensures that a good system for the proper functioning of the centre is adopted. It is also responsible for the maintenance and effective running of the centre and will include these spaces/facilities:

- Manager's offices
- Secretary's office
- General Offices
- Staff Convenience

Multipurpose Hall

A multipurpose hall is a large room built to enable an audience to hear and watch performances at venues such as theatres. The hall is used for children birthday parties, performances, lectures, seminars, events and other functions. Asides the exhibition hall, the multipurpose hall is a fundamental facility in the centre. Because of the public role of this space, the multipurpose hall will be given a major entrance from behind to allow easy access without necessarily passing through the centre's main entrance. Factors to be considered in the auditorium design include:

- The maximum number of people to be accommodated in the hall
- The different purposes for which the multipurpose hall is to be used.

- The access and circulation requirement.
- The plan, shape, form and finishes of the interior.

Exhibition Hall

The exhibition hall is a space meant for the display of several types of toys, props, models that relates to children. The exhibition hall is located close to the main circulation area so that people entering the centre would be attracted to have a view of the products being displayed. This space is a very important facility in the centre because it fetches the necessary revenue for the centre. It is spacious enough and obstruction free for proper navigation of people viewing the works, and artifacts on display.

4.3.3. LEARNING FACILITIES

Learning facilities in this context refers to those facilities in the centre provided to encourage both the young and old people to learn, through different mediums, various aspects of children play activities. These facilities include:

- Classrooms
- Workshops
- Audiovisual room
- Reference library
- Lecture halls

Workshop

The workshop is a space used to children to learn about wood works, carving, basket weaving, e.t.c. children are directly involved here as they are taught how to make funny and interesting models of objects they are taught in class like cartoons, cars, superman etc. painting cum artistic work are carried out here as assignments etc.

Audio visual room

The term audiovisual may refer to works with both sound and visual components, the production or use of such works, or the equipment used to create and present such works. Slide-tape presentations, films, and television programs are examples of audiovisual presentations as are most major church services and other live theater production .A room dedicated to these activities is referred to as an audio visual room. The electronic revolution is having an impact on art galleries and the type of visitor is changing, becoming more

diversified and more demanding. For the new generation viewing is not enough; interaction is expected. Virtual reality provides a strong context for art and a greater possibility for viewer interaction than any other means yet devised.

4.3.4. ANCILLARY FACILITIES

This includes other support facilities needed for the scheme. These facilities will include the following:

- Shops
- Restaurant
- Souvenir store
- Indoor recreational room
- Photo studio
- Storage rooms
- Janitor's room
- On-site features;
- Recreational garden
- Parking spaces
- Power/ plant house
- Waste disposal unit
- Water supply unit
- Outdoor play grounds

Classrooms:

A classroom is the architecturally defined area that contains each group of children and their teacher(s). Classrooms may be separated by full partitions or partial barriers that allow controlled visual or acoustical connections to height, is required both adjacent to corridors and between classrooms where possible. The classrooms themselves should be as open as possible, allowing supervision and the penetration of natural light. The classroom contains the required spaces for all recommended activities, as well as spaces for personal care. It should be flexible enough to support variable demographics of the clientele as well as to allow program adjustments to serve fluctuating demand for child care services. Adequate space is also necessary for storing children's and teacher's personal items, curriculum materials, supplies, and equipment.

Common Spaces:

Spaces shared by more than one group are included in this category. The designer needs to be cognizant that the child may spend very few hours of the day in his or her home. The center becomes the "home away from home" for the child. The design should convey this impression. A common area that "feels" like the core of the center is an excellent organizing concept and one which will dispel an institutional feeling, especially if it is treated in a "home-like" way. This may be simply an area of the circulation that provides a stopping place that allows social interaction. However, it should not be the multi-purpose room. Circulation through the multi-purpose room has proved to be an undesirable design feature. Other common areas may consist of one or more of the following: multiple-purpose area, large motor activity area, meeting/gathering area, and a separate sick bay (if the latter is required to meet local licensing requirements).

Play Yards:

Play yards are outdoor extensions of the classrooms, providing many of the same opportunities as indoor spaces. Play yards should provide for a variety of developmentally appropriate activities and include storage for curriculum equipment as well as wheeled toys, trikes and wagons. Spending time on the playground is undoubtedly the preferred activity of children. Therefore, to the greatest extent possible, the designer should arrange ease of access to the play yard from the classroom and maximum adult supervision.

Parking Spaces:

Parking lots should be large enough to handle one car for at least every four visitors. It should be designed to permit convenient and speedy exit and should have good access from traffic routes. The parking lot should be so arranged as to permit the quick departure of any car in case of an emergency.

Parking requirements for cars and other vehicles will depend to some extent on the proximity and conditions for use of the facility. However, the distance of the building from the car park should not be excessive. Sufficient parking would be provided to cater for the large number of people using the facility. The parking would be strategically placed so that the different facilities of the centre can be accessed conveniently. There shall be spaces for the physically challenged.

Storage rooms

A variety of storage rooms are needed for collection and storage of artifacts, mechanical instruments, and other additional items, which may be in reserve for future use. The amount of space set aside for furniture storage is usually 0.2-0.3m2 per room, but more precise requirements depend on the policy towards internal maintenance.

Power/ Plant House:

The power house is normally detached from the terminal building due to pollution, noise and vibration. For this design, there is a generator and a plant room that is located on site but quite distant from the building. The generator is provided as an alternative standby power source for times when the public power supply might not be available.

4.4.0. PLANNING FOR ADULTS AND CHILDREN IN THE CENTRE

This part of the work identifies users of the centre, the basic needs and activities of each age group, and how these needs and activities impact the centre design. The design of the child care centre should accommodate the needs of children, parents, teachers, administrators, and service personnel in a comfortable and nurturing environment. It must allow adults to care for children in settings designed primarily for use by children. The following summarizes the needs of each group.

4.4.1. ADULTS

PARENTS

The designer should keep the needs and convenience of these busy adults in mind when planning and designing the centre. At the same time, the design should provide a setting that supports a community of centre users. This will serve the needs of the children and the agency. It will enhance a natural, home-like environment for children and will increase the employee's allegiance to the workplace as a quality, family-friendly environment. The design can respond to the needs of parents by addressing:

- Temporary parking arrangements for drop-off and pickup.
- Ease of navigating corridors with strollers and buggies (angled corners are an aid).
- Stroller storage.
- A clearly visible bulletin board location.
- Mail boxes dedicated to the needs of parents.

- Central, relaxed-feeling place for parents to meet and chat with other parents and staff, and to deposit tuition checks, etc.
- Ease of assisting children with outer garments in spaces designed to accommodate several children and adults as they do the same.
- Private space for parent/teacher to conference.
- Adequate refrigerator space to store formula and food.

Adult family members spend time in the centre in several different ways, including arriving with the children, picking them up to take them home, as well as spending time with them while at the centre. For instance, parents may eat lunch at the centre with the children, meet with teachers and staff, socialize with other parents, and participate in centre activities, organizations, and programs. The centre may even function as a focus for human contact and stress reduction that is not possible within the worker's own work environment.

For instance, parents accompany their child to the classroom. When they arrive there, the parents usually help children remove and store their outdoor clothing. They may bring infants in strollers. They also leave messages for teachers and receive messages from them, usually at one location designed specifically for that purpose. They may linger to spend time with the child or to talk to the teacher before departing. The entry, reception, and classroom cubby areas provide a social setting for the parents, without disrupting the flow of activity in the classrooms. Parents may visit their children during the day. Nursing mothers might visit the centre to feed their infants and, therefore, a private, intimate-feeling, area should be provided for them to do so.

Parents also come to the centre for conferences with teachers. Information may be posted for the parents on a bulletin board, typically located along the entrance path. The centre will have slotted fee boxes for tuition checks and small cubbies for private mail communications between the parent and the centre. These must be considered in the design. Finally, parents are encouraged to participate in volunteer activities at the centre such as serving on committees or boards, participating in fund-raising activities, assisting with field trips, and various types of classroom assistance.

4.4.2. STAFF

A. TEACHERS

Teachers care for and supervise the children. In a quality program, they promote learning and developmental activities through a curriculum designed for stimulation and development. Curriculum activities occur not only in classrooms, but in play yards, multiple-purpose spaces, and on excursions outside the centre. Teachers are responsible for the children while at the centre, including greeting them and their parent when they arrive. Teachers ensure that only authorized individuals pick up the children at the end of the day. Teachers also prepare curriculum materials and projects for the children and confer with the parents and administrators. Teachers need time away from their classroom in a separate lounge, which may double as a workroom. They need adequate storage areas, not only for curriculum materials and supplies, but also to lock up their personal effects. Because their job is demanding, the designer should focus on creating organized arrangements so that teachers may focus more easily on the children. This is one of the core challenges in designing a centre. The design can facilitate the needs of teachers by providing:

- Ample elevated wall hung storage (above children's level but also located to avoid the possibility of adults striking their heads on it). All elevated storage should be designed to avoid the possibility of items inadvertently falling on children below.
- Elevated electrical outlets for equipment such as audio devices. (There should also be CD and tape storage.) Locations should be coordinated with the RCCC and with the provider (if possible).
- Planning and designing the centre so that location of outlets is convenient to elevated electronic equipment.
- Conveniently located, accessible adult toilet(s), complying with ADAAG. Convenient storage for teachers' outer garments and items such as boots, etc.
- A comfortable and private place to confer with parents.
- A resource room where teaching materials and equipment can be stored in an orderly and highly visible fashion.
- Locked space to store personal belongings.
- A comfortable lounge which teachers can use for breaks, lunches, and to prepare teaching plans and materials.
- Adequate shelving or counter space for teachers to display teaching materials within the center.
- An easy means of displaying children's art projects at children's level.

B. ADMINISTRATORS

Also referred to as directors, these individuals are responsible for managing the centre, supervising the teaching staff, and communicating with parents, and boards of directors. In small centres, the administrator may also assume a teaching role for part of the day. In large centres, the director will usually have a secretary or assistant to help with the administrative workload. The needs of the Centre Administrator can be met by providing:

- An optimal amount of visibility, particularly to easily observe those approaching and entering the facility.
- Locked space for personal belongings.
- An adequately sized office with room for a desk, an office chair, at least two visitor chairs, filing cabinets, space for equipment (unless it is located elsewhere) including a personal computer, printer, copier and fax machine.

- If provider personnel, including the administrator, are consulted during design, their input about work flow, filing and equipment needs can be very valuable.

C. SERVICE PERSONNEL:

Centres require food, laundry, janitorial service, delivery, waste and refuse removal, and general maintenance services. The design must provide space and controlled access for personnel or contractors performing these services.

Laundry services will typically be performed by the teaching staff. Infants and toddlers generally use disposable diapers provided by parents. All soiled diapers are contained and processed separately from other waste and linens. Facilities need to be provided for this. The needs of the service personnel can be expedited by:

- Adequate space in janitor's well-located closet for cleaning materials.
- Ease of supply delivery.
- Efficiently designed facilities for waste disposal.
- Adequate locked storage for toxic materials.
- Easily implemented recycling programs.
- Adequate counter space and efficient kitchen arrangement.
- Adequate refrigerator space.
- Generous, deep, three-compartment sink and gooseneck faucets with spray attachment and disposal in kitchens.

- Finish materials and building design features that are easy to clean with minimal use of unhealthful cleaning materials. (LEED draft renovation guidelines).
- Protection from the potential health and indoor air quality impacts of cleaning and maintenance activities by the use of appropriate design features.

4.4.3. CHILDREN

Pre-school and younger children spend an average of nine hours per day at the centre. For most of their care, children remain at the facility. There are occasions when the children leave the centre on field trips with teachers and centre volunteers. The centre must promote a child's optimal development by providing safe, interesting, health-promoting, and appropriate environments which allow the children to engage in developmentally appropriate activities.

Children's needs, in many respects, correspond to their age. Although each child develops according to his or her unique schedule, children can be characterized as belonging to general age categories of development, with each age group having a different set of needs. To meet these needs, the space for each age group will be inherently different. The following four broad age groupings will be referred to throughout the Guide. In any individual centre, actual age ranges between groups may overlap. In some centres, children may be grouped in mixed-age classrooms. Age ranges are as follows:

- Infants (birth to 12 months)
- Toddlers (12 to 36 months), including subgroups of:
- Younger toddlers (12 to 24 months)
- Older toddlers (24 to 36 months)
- Pre-school children (36 months and older, not in kindergarten)
- School-age (6 years and older; enrolled in after-school or summer programs at the centre)

A. INFANTS

For the infant, the environment must provide many opportunities for activities throughout the day. The infant classroom needs to be warm and nurturing in character. Typically, infant groups will be comprised of six to eight infants cared for by two teachers. Infants are brought to their classroom by their parents. Clothing and supplies, usually carried in a diaper bag, are placed in each infant's cubby storage space. Diapers and wipes are stored in separate

compartments at the diapering area within easy reach of the changing table. Strollers or tote bags that are left at the centre during the day should be stored on pegs or rods in storage areas. Formula is kept refrigerated.

As infants mature, their sleep needs decrease from the frequent naps of young infancy to a few naps at regular times during the day. Because each infant may have a unique schedule, a variety of activities can take place in the infant room at any given time, ranging from playing, diaper changing, and eating to sleeping, cuddling, and nursing. This variety of activities requires that quiet areas be separate from more active areas.

Most infants have not begun toilet training, so frequent diaper changes are needed. When teachers are with an infant at the diaper changing table, they also need to supervise other infants and maintain visibility to other infants. Visible connection between teacher and infant should be maintained to the maximum extent feasible. The design and location of changing tables should reflect this requirement. Teachers' view into the activity area should be unobstructed while at the diaper changing area. When infants are in the activity area, they must be able to see teachers as well. During the first year, the infant's diet progresses from nursing and bottle feeding to soft foods and finger foods. For young infants, eating is a nurturing time, with the infant either nursed by the mother or held by a teacher or parent during bottle feedings. Teachers may start to feed infants soft foods at around 5-6 months. At around 9 months, infants, seated in low high chairs, begin to feed themselves and drink from cups. This process can be very explorative and messy. At around 12 months, infants eat at low, round tables. The dining atmosphere changes from a quiet, intimate environment to an active, social event.

Developmentally appropriate activities for this group include interaction with teachers, children, and other infants; experiencing the environment through all the senses; and physical movement through the space. Infants need a safe, stimulating environment where they can explore, absorb, and organize information about their world. They exercise muscles by crawling and climbing on soft surfaces and over slight level changes. They can pull to standing and practice walking by using low grab bars. Manipulative, stimulating toys and other learning materials help infants learn about objects and enable them to develop motor coordination. Toys should be placed on low, open shelving where the infant can see and grasp them.

In rooms with high ceilings, mobiles may be hung from the ceiling at least 2035 mm above the floor. The classroom should offer a series of intriguing attractions for crawling and standing infants, particularly at eye level (300 mm - 450 mm above the floor). The environment, including toys, aids in the infants' language development. The design and scale of furnishings and equipment in the infant room should support the infant's activities, while assisting the care-giving adults. The design must allow teachers to see and hear all the infants at any given time, and quickly reach any one of them if the need arises. Infants also must be able to readily see the teacher as they need the psychological security of a teacher's presence. Infants spend time in their outdoor play yard under the supervision of their teachers safely apart from, but usually in view of, the older children. Infants, particularly those that are crawling and starting to walk, require outdoor opportunities to explore and move about the safe world of the infant play yard.

Teachers may assist infants in their exploration of the world by taking them on "strolls" through the building and outdoors. Infants, riding in groups in multi-passenger strollers, benefit from both social interaction and sensory stimulation from these excursions. Some conditions that will greatly enhance the quality of care which teachers can provide include the following:

- Gross motor area (away from the main circulation flow) that is soft and easily cleaned, with a provision of continuous soft mat. Typically, the area should be defined by a low (300-450 mm) padded bumper which may or may not be built-in to contain the crawl area and to provide for adult seating near infant's level.
- Low padded risers for level change.
- Visual contact with the exterior at infants' eye-level.
- Cribs directly observable by teachers.
- Cribs located under soft, preferably dimmer-controlled lighting.
- Toys easily accessible to the infants from open shelving.
- Provision of continuous impervious flooring in the feeding area.
- Provision of space for infants to eat in a social environment (as opposed to an isolated, lined up high chair arrangement).

The conceptual sleeping area arrangement shown below uses clear vision divider panels to allow for more efficient placement of cribs. Small, three-drawer dressers placed between the

cribs create the feel of a homelike bedroom, provide additional storage for diapers, and provide necessary clearance between cribs. Check with local licensing to ensure applicability.

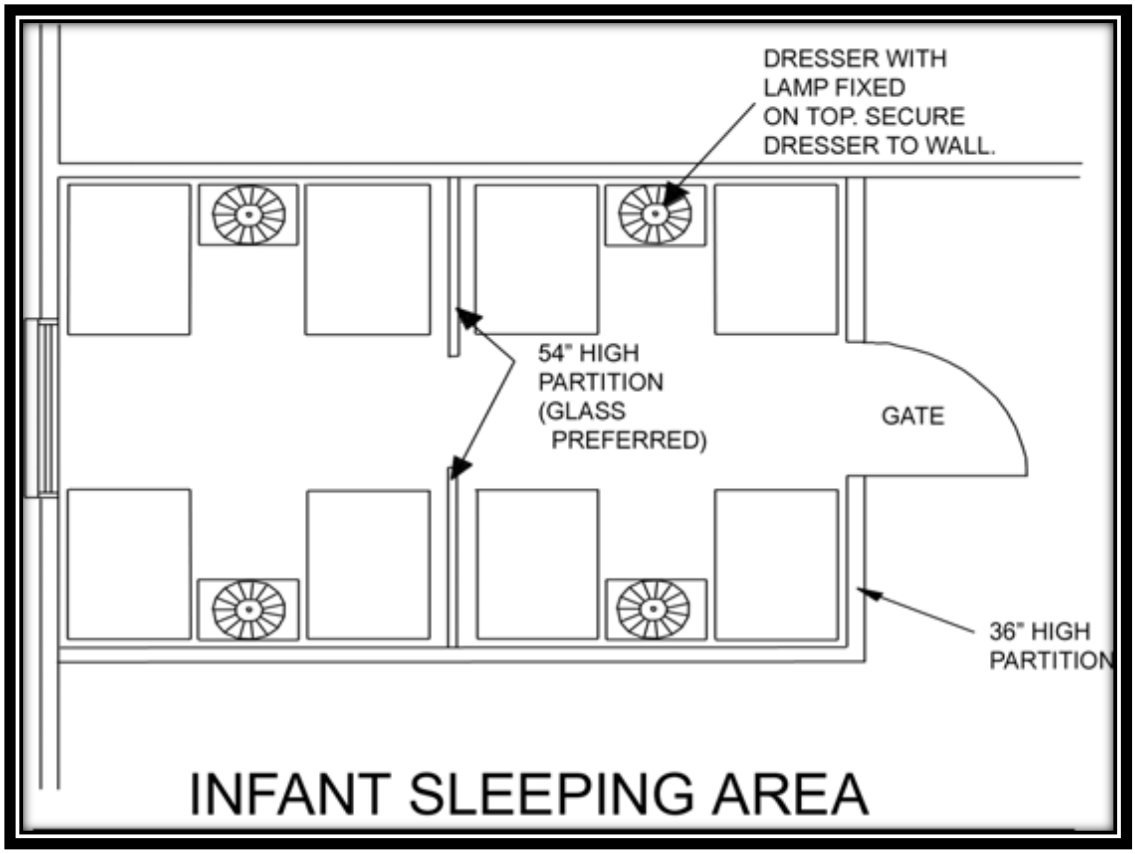

Figure 4.1: Image showing infant sleeping area
Source: *Child Data - The Handbook for Child Measurements and Capabilities - Data for Design Safety Authors; Beverly Norris and John R. Wilson*

B. TODDLERS

Young Toddlers:

The toddler classroom hums with activity as toddlers quickly move through their space, involved in all the activities available to them. This environment needs to be stimulating, offering the child a safe, yet warm and nurturing place to spend the day. Often, this group includes 2 teachers and 10 to 12 younger toddlers or up to 14 older toddlers.

At the beginning of the day, toddlers arrive at the classroom with their parents who may assist them with removing their outdoor clothing and storing items in their cubbies. Young toddlers will usually have diaper bags to store in their cubbies and supplies to be placed at the diapering area. The older toddlers may bring lunches or toys from home, perhaps carrying them in satchels or backpacks which can also be used to carry such things as papers and art

work home at the end of the day. Satchels and backpacks may be stored in the cubbies or within the classroom on hooks provided.

Toddlers are in the process of gaining independence, advancing in their feeding, toileting, and dressing skills. Furnishings and equipment need to be scaled for this age group to encourage growth toward independence. Older toddlers may nap only once a day on cots or mats which are stored while not in use, while younger toddlers may nap more often and need a crib in a quiet area. Most care functions take place in the classroom with the teacher's assistance.

Toddlers gather at child-scaled tables for snacks and lunch time. They can feed themselves with some assistance from their teachers. Toddlers are beginning toilet training and require a child-scaled toilet area in their classroom. Young toddlers still need diapering areas as well as child sized toilet facilities.

Older Toddlers:

Toddlers are busy experiencing their environment, developing essential motor skills as they take part in active play. They are mastering walking, and are beginning to develop running, jumping, and climbing skills. Toddler rooms need to provide stimulating opportunities for active crawling, pushing wheeled toys, climbing in and out of play components, cruising, (movement through space to view and select from a variety of activities), as well as beginning to walk, and climbing up and down stairs. Toddlers tend to move about very quickly, often in groups rather than individually, and the design must allow for this group action. Features such as wide access to lofts and generous, clear pathways (no sharp corners) should be provided. This age group is involved in other developmental activities as well, such as beginning block play and social play and space must be provided for these activities. The development of language skills is assisted through the use of simple books, pictures, puzzles, and music.

Toddlers thrive on exploration and creativity; enjoying fantasy activities, playing with props, and making choices. Manipulative toys and materials should be located on low, open shelving where the toddler can see and easily reach them.

Teachers in this classroom assist and interact with the toddler, encouraging the development of greater independence. Though space should be generally scaled to child size, the classroom design must also permit teacher access to all spaces. To enhance the functioning of

the center, experience has shown that a diaper changing table should be provided in older toddler classrooms, even though older toddlers are typically toilet trained. This addition will help teachers.

While toddlers are beginning to develop, they need easy visual access to their teachers for security and comfort. A functional and nurturing feature which is highly recommended is a simple series of three to four low risers which several toddlers at a time can occupy. This arrangement also provides excellent seating for adults while they interact with several children — reading them a story, for example. This need not be a built in feature.

Toddlers, accompanied by their teachers, will spend time in their outdoor play yard, apart but not visually or acoustically separated from older children's play yards. The outdoor space offers many opportunities for activities such as cruising, climbing, and manipulative play involving materials such as sand and water. This group may take part in activities in a multiple-purpose area as well.

Toddlers, with their teachers, may go outside the building on excursions, allowing for more exploration and interaction. Younger toddlers may need to be transported in multi-passenger strollers. Older toddlers may walk hand-in-hand with their teachers.

C. PRE-SCHOOL CHILDREN:

Pre-school children are expanding their vocabulary, and are developing language, small and large muscle coordination, and complex cognitive/ social skills. This group may consist of as many as 18 to 20 pre-school children (with 2 teachers) busily pursuing all the recommended activities available to them in an environment which is safe, durable, and interesting without overstimulating the children. These children arrive at the classroom with their parents and, after storing their outdoor clothing and personal items (perhaps using a satchel or backpack), they begin their day in the center. The pre-school classroom needs large, bright, unrestricted spaces, as well as intimate, quiet areas with soft materials.

Pre-school children usually need a nap or quiet time. This normally occurs in the classroom space on cots or mats that are stored when not in use. Mealtime is an opportunity for social interaction as the children and their teachers gather around tables in the classroom to eat snacks and lunch. Children at this age are actively exploring their environment; exercising large muscle skills by running, jumping, galloping, riding wheeled toys, and playing various

ball games. The pre-school classroom requires a large amount of architecturally unrestricted available space which teachers and children can divide into smaller learning environments. The number of children in the group and the type of activities in which they are involved impact this space requirement. Because they have typically become more independent, they tend to initiate their own activity by accessing appropriate materials and by displaying their own work.

Other activities for this group are dramatic play, music, painting, puzzles, block play, and storytelling. Children are involved in projects, including art, manipulative play, simple food preparation, elementary math, problem solving, science, and gardening. Pre-school children will spend a lot of time in their outdoor play yard as weather permits and also in a multiple-purpose space, if provided. They will participate in many of the same activities in the play yard as those pursued in the classroom. Children will also go on field trips outside the center, either walking with their teachers or being transported.

D. SCHOOL-AGE CHILDREN:

School-age children come to the center for before/after-school care and, holiday and summer programs. Their needs differ from pre-school children, and the area of the center devoted to them should reflect those differences, including the need for separate male and female toilet facilities.

This group can have as many as 20 to 24 children with 2 teachers. Their classroom, and ideally even its entrance, should be somewhat apart from the other classrooms. The area should include appropriately scaled furnishings and equipment, and a slightly more sophisticated "clubhouse" atmosphere.

School-age children spend their time in the center involved in developmentally appropriate activities. They may eat or snack, do homework, enjoy audiovisual entertainment, play games, and participate in active games and outdoor sports. Children coming to the center from a full-day school program need space that is homelike and comfortable, that provides areas for both quiet activities and more active play. After-school programs require a separate classroom, but not one necessarily contiguous with the rest of the center.

4.5.0. ANTHROPOMETRICS

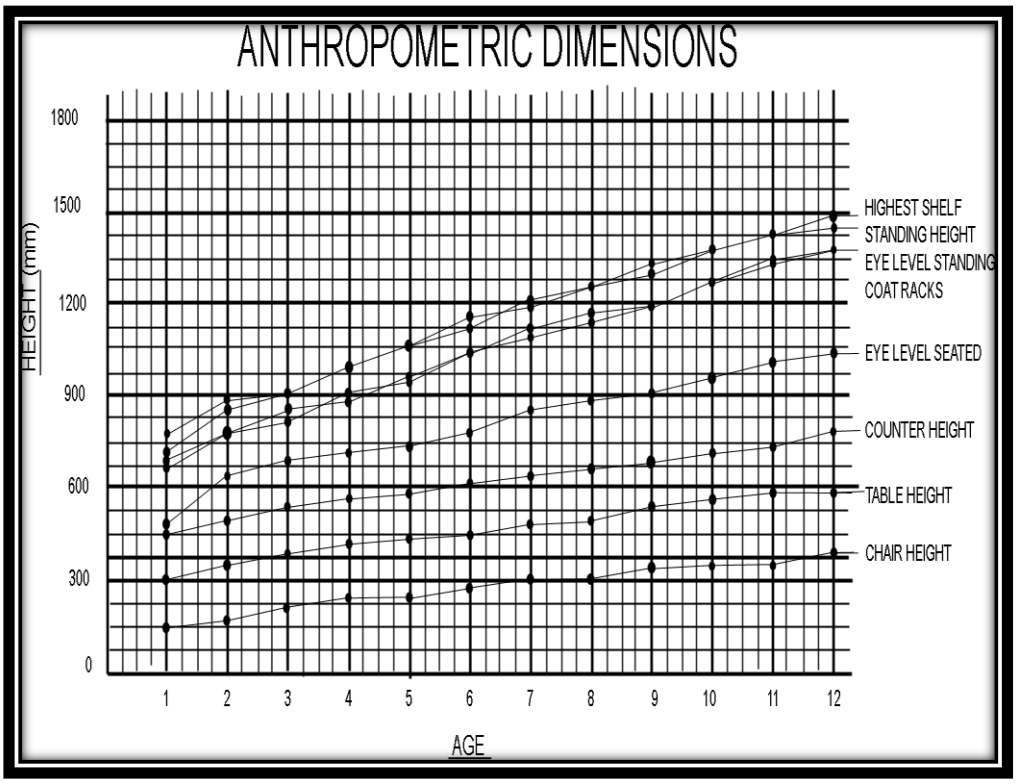

Figure 4.2: Images showing anthropometric dimensions

Source: *Child Data - The Handbook for Child Measurements and Capabilities - Data for Design Safety Authors; Beverly Norris and John R. Wilson*

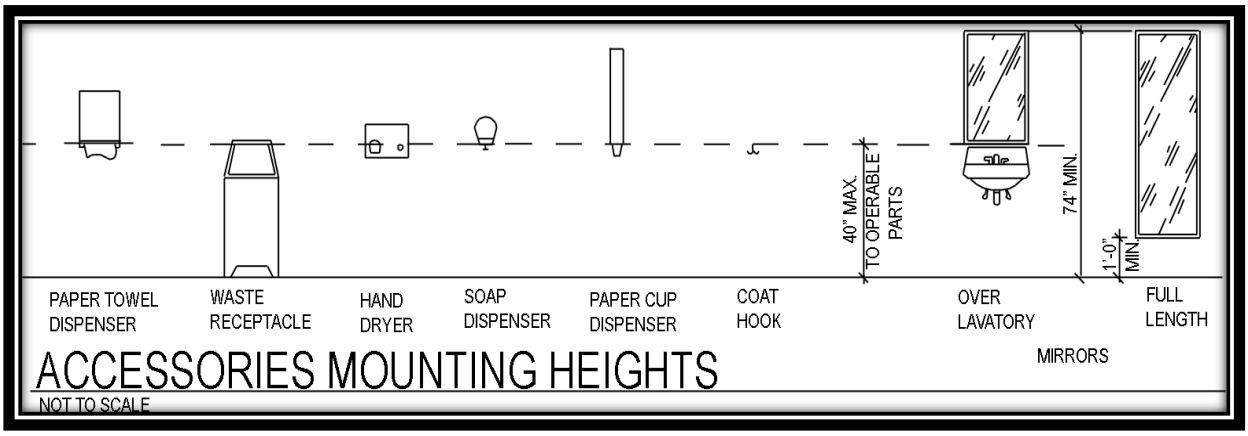

Figure 4.3: Images showing accessories mounting heights.

Source: *Child Data - The Handbook for Child Measurements and Capabilities - Data for Design Safety Authors; Beverly Norris and John R. Wilson*

4.6.0. SPACE/ FUNCTIONAL ANALYSIS

According to Mukhopadyay et'al (1985) as cited by Uji (2002), a complete picture of the design process requires both a 'decision sequence' and a 'design process or morphology'. Thus, for an effective spatial organization of the children centre, it is imperative that the interrelationship between spaces within the centre is taken into consideration in the course of the design. Spaces that are related should be interconnected for maximum utilization of the spaces. It is equally important to determine which space is to be placed where and why. The central objective is to organize the several spaces within the centre in a manner which will assure maximum flexibility, user participation and effective functionality.

4.6.1. CONCEPT FOR SITE DESIGN

This part of the work provides concepts and criteria for site design and design of the play yards. It identifies the general types of outdoor areas required, discusses the relationships of these areas to other outdoor and indoor spaces, and provides detailed criteria for materials, features, furnishings, and equipment required in these spaces.

4.6.2. SITE ZONING

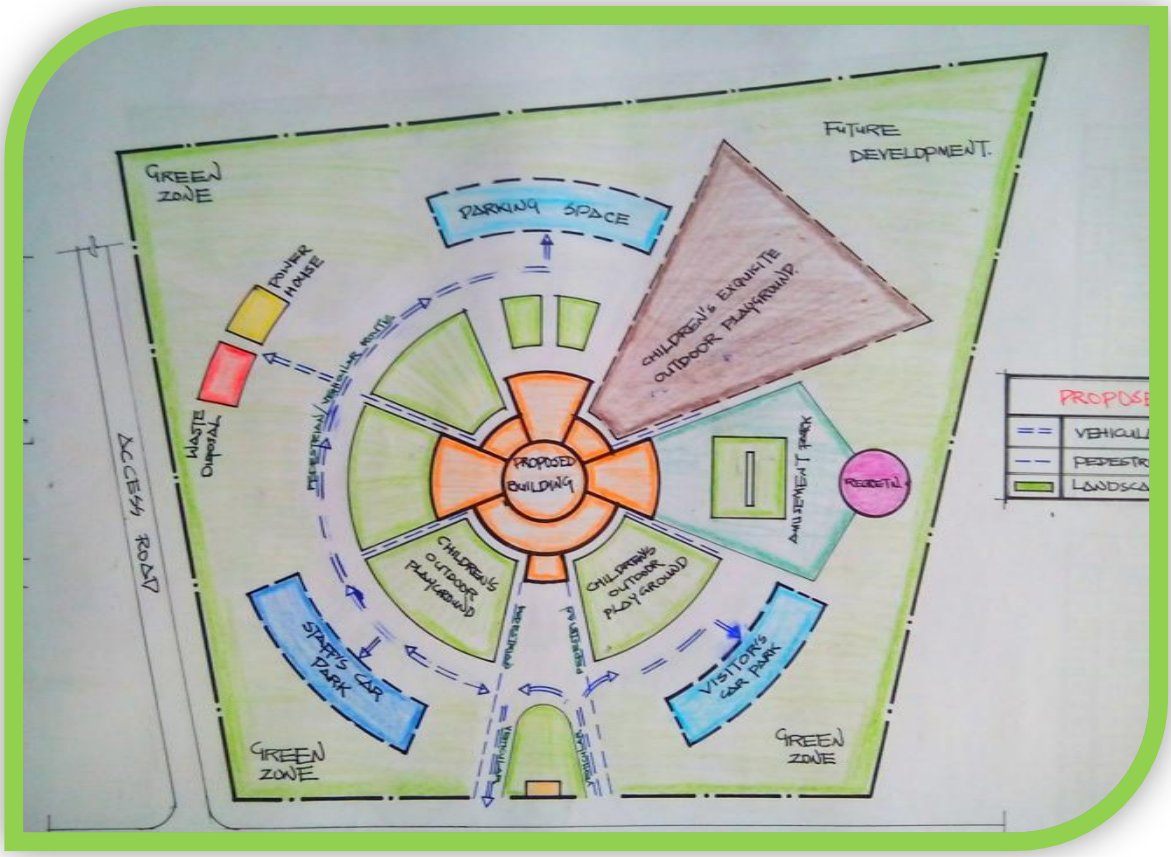

Figure 4.4: Zoning of the proposed site | ***Source:*** *Author's illustration (2016).*

4.6.3. ZONING OF FUNCTIONS IN THE BUILDING

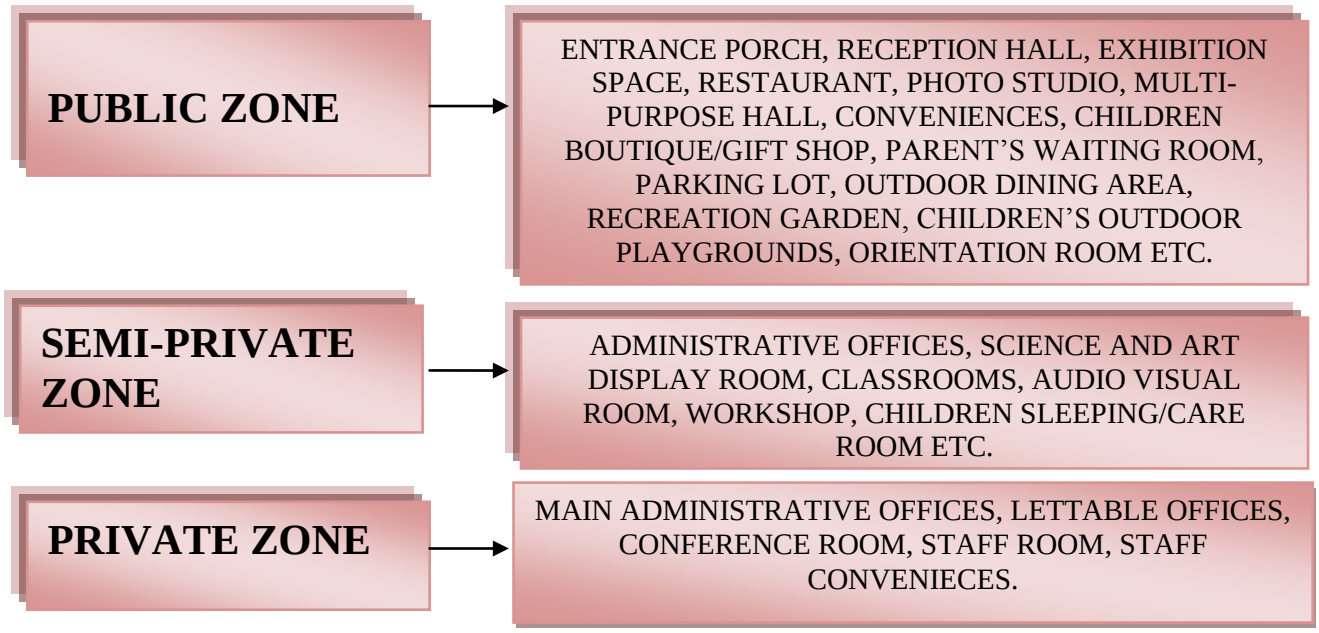

Fig. 4.5: Zoning of the proposed Children's Edutainment and Exhibition Centre. | ***Source:*** *Author's illustration (2016)*

4.6.4. BUBBLE DIAGRAM

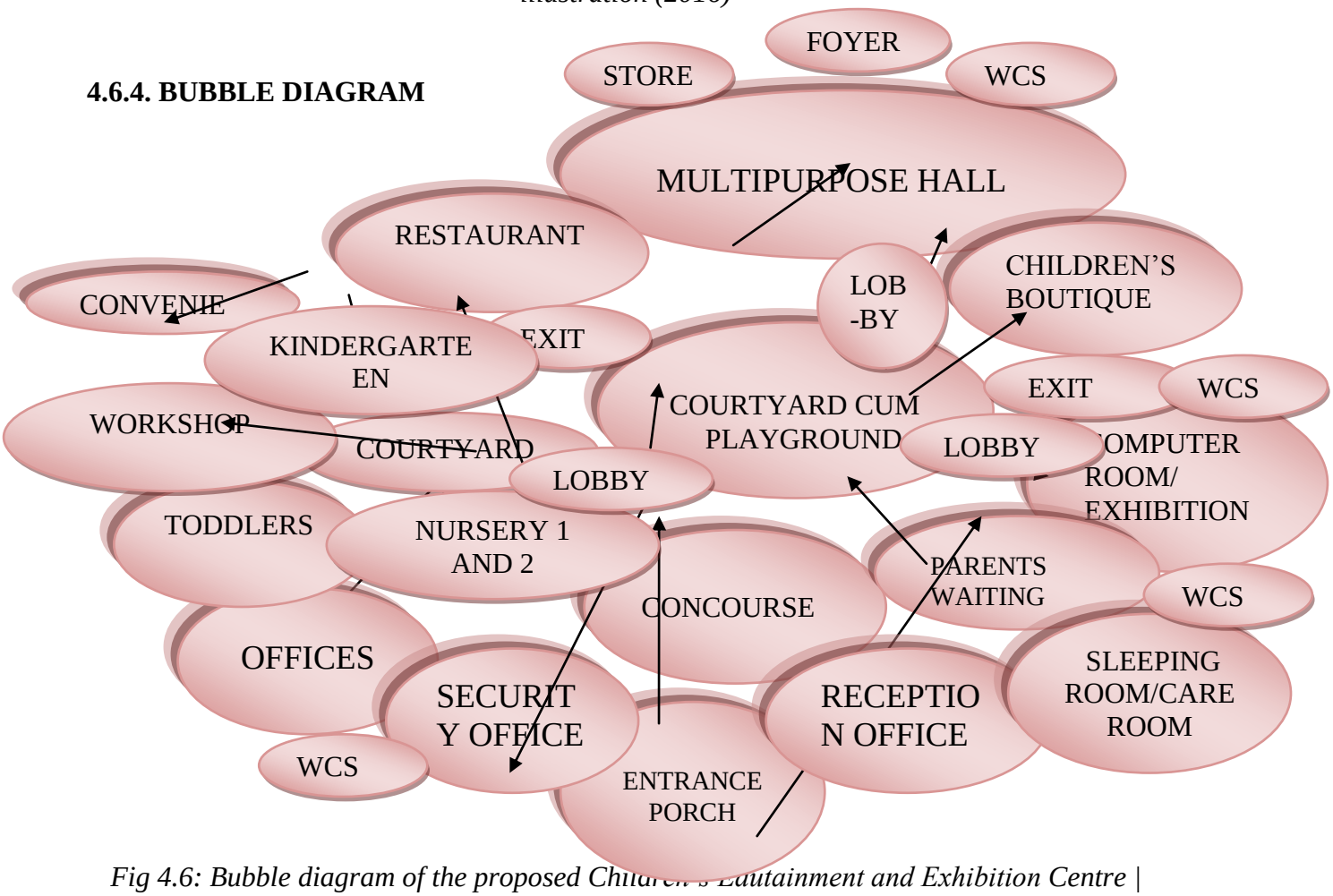

Fig 4.6: Bubble diagram of the proposed Children's Edutainment and Exhibition Centre | ***Source****: Author's graphical illustrations (2016).*

4.6.5. ACCOMMODATION SCHEDULE

S/N	SPACES	NO OF USERS	AREA/PERSON (m²)	UNIT	TOTAL AREA (m²)
1	ENTRANCE PORCH	VARIABLE	VARIABLE	1	54
2	RECEPTION/SECURITY BOOTH	VARIABLE	VARIABLE	1EACH	30
3	CONCOURSE	VARIABLE	VARIABLE	1	60
4	CONFERENCE ROOM	14	0.6	1	8.4
5	RESTAURANT	50	1.33	1	66.5
6	ADMINISTRATNE OFFICES	4	12.5	4	50
7	CURATOR OFFICE/DISPLAYS	VARIABLE	2.4	4	VARIABLE
8	STAFF ROOM	12	0.6	1	7.2
9	ENTRANCE FOYER	VARIABLE	VARIABLE	2	80
10	CHILDREN'S ORIENTATION ROOM	24	1.8	1	43.2
11	CLASSROOMS FOR CHILDREN	150	0.6	5	450
12	PARENTS WAITING AREA	VARIABLE	0.6	1	50
13	CHILDREN'S SLEEPING ROOM	12	3.4	1	40
14	CENTRAL COURTYARD/PLAYGROUND	VARIABLE	VARIABLE	1	—
15	EXHIBITION HALL	VARIABLE	VARIABLE	1	100
16	AUDIO VISUAL/COMPUTER ROOM	VARIABLE	5-6	1	108
17	CONVENIENCES	VARIABLE		26	—
18	MULTIPURPOSE HALL	300	0.6	1	180
19	CHILDREN'S BOUTIQUE	30	0.4	1	12
20	CHILDREN'S WORKSHOP	10	2.4	1	24
	TOTAL				

Table 4.1: Accommodation schedule of the proposed Children's Edutainment and Exhibition Centre. | ***Source:*** *Author's illustration (2016).*

4.7.0. CONSTRUCION MATERIALS AND FINISHES

4.7.1. CONSTRUCTION MATERIALS

According to Florez *et al (2009),* every building project involves the choice of building materials or means used for the selection process. Material selection is a complex and delicate task determined by the immense number of building material options. Likewise, multiple factors are often considered by the architect when evaluating the various categories of building materials. Rahman *et al,* (2008) opined that as with the design process, cautious consideration of contextual preconditions is crucial to selecting appropriate building materials or products. Wastiels *et al* (2008), avers that in addition, selecting suitable building material options can be a very complex process, being influenced and determined by numerous preconditions, decisions, and considerations. In other words, in choosing the right material,

there is not always a single definite criterion of selection, which means designers or architects have to take into account a large number of material selection factors. Therefore, materials should be chosen not only because of the excitement they are meant to create but also based on the following:

- Durability
- Acoustics
- Fire resistance
- Serviceability
- Safety
- Aesthetics
- Cost effectiveness

Generally, the major materials to be used are mainly reinforced concrete and steel for structural elements and steel trusses for the roof. Materials such as aluminum composite boards (aluco bond) will be used to clad exposed steel surfaces. The construction materials to be used for the project shall be discussed under the following building components:

Floors

The floors shall be made of materials which have good resistance to wear and are of high density grade. It should possess the quality of being easily cleaned and maintained. The floors will also be laid with attractive flooring materials, which should also serve the functional purpose of being safe for the users of the building.

Walls

The materials used for the walls would possess the qualities already listed above. The walls of the auditorium shall possess high acoustic qualities in order to absorb sounds.

Partition Walls

Two categories of partitions are involved:

Fixed partitions separating rooms, corridors and ducts etc. which are dictated by fire resistance and noise insulation standards, and Removable partitions dividing up halls into smaller area. Fixed partitions are generally a minimum 225mm brick or block plastered to separate areas for different function.

Roof

The roof must be able to withstand every form of adverse wind effect and adverse weather condition. In this design, a steel roof system is to be used because of its durability and its ability to span very large areas. The roofing sheet shall be long span aluminum.

Ceiling

The ceiling of the building will be of reflective poly-vinyl chloride ceiling sheets. This is to be done in order to ensure reflectance of light. The ceiling color shall be white in colour in order for the uniform light distribution throughout the room. This is to be installed in a regularly spaced pattern.

Where fluorescent fixtures which are integral with the ceiling must be used because the ceiling is too low for suspended fixtures, 600 mm x 600 mm baffled fixtures will render a less institutional appearance and offer greater flexibility. Where feasible, baffled fixtures should be used. However, the designer should consider the benefits of incorporating other materials which will render a more home-like environment, such as wall board bulkheads and soffits where practical, as well as a variety of lighting type and style. Ceiling tiles should be of a high (80% min) light reflectance to enhance the lighting quality of the interior spaces. A limited area (2 m squared maximum per classroom) of mirrored ceiling tiles are encouraged over an activity area.

Painted gypsum board is appropriate in areas with soffits, ceiling height changes, vaults, or wet areas. Do not use wall board for ceiling areas where service access is required in the ceiling plenum for plumbing, HVAC, or other equipment. Exposing structural ceiling elements provides children an interesting environment, and may increase the perceived height in low spaces, but this can also require additional acoustical treatment such as the addition of acoustical baffles. A standard ceiling tile, easily replaced in case of damage, should be specified for acoustic ceilings. Luminous ceilings should not be used in areas occupied by children.

Windows

Windows are provided to lobbies and transition areas, to allow day lighting to the interior. However, for a reasonable sound resistance, special acoustic double glazing will be used. Natural light into the interior, visual access from the interior to the exterior of the building,

and visual access within the center are all of particular importance in environments for children. Windows should be provided from classrooms to the outside, between classrooms, and from classrooms to circulation paths. Both children and adult caregivers must be considered in meeting these requirements. The height and scale of windows, type of glass, clear view (no horizontal members blocking view of either adults or children), control of light, the impact of the FPS Risk Assessment, and safety factors must all be weighed. The designer should make every effort in the design to provide an exterior window for every classroom, as a minimum. In the event that this cannot be effected and an interior space must be occupied by children, the design must still allow optimal access to light and view via clerestories, sidelights, windows, and clear lite doors (with safety glass).

Children's spaces in new construction must have a total window area of at least:

- 8% percent of the floor area of the room if windows face south directly to the outdoors. (Note: the area of south facing glass is less since the quality of south facing light is generally brighter.)
- 10% percent of the floor area of the room if windows face east or west. 15 percent of the floor area of the room if windows face north. 20% percent of the floor area of the room if windows are not on an exterior wall. These must be oriented to "capture" the maximum amount of natural light. Any exceptions to these percentages must be approved by the RCCC. Areas not requiring windows include toilets, kitchen areas, laundry, multipurpose, office, conference, lounge, and storage rooms. In existing construction where the above cannot be met, at a minimum, full spectrum indirect is required.

As directed by the Federal Protective Service risk assessment, window systems (glazing, frames, anchorage to supporting walls, etc.) on the exterior facades of child care centers must be designed to mitigate the hazard of glass fragments (or even whole panes) flying into occupied space following an explosive event at the exterior. To do this, the design must balance the features of the glazing, framing, and attachments with the capacity of the supporting structure to allow the system to develop its full resistive capacity. Coordination with FPS is paramount on this issue, as this feature may have a significant effect on the budget. Horizontal window muttons (horizontal mullions) should not be located between 600 mm and 1100 mm above the finished floor because they could be used as climbing support.

Windows should be placed lower, at children's viewing height above the floor. Maximum window sill heights for children are 450 mm above the finished floor for infants; 600 mm above the finished floor for toddlers; and 750 mm above the finished floor for preschool children. Ideally, sill heights should be lower than these heights, but in doing so it may constrict furniture arrangements. For the same reason, and for the likelihood of drafts, glass to the floor is undesirable.

Windows and doors with glass lower than 915 mm above the finished floor must have safety guards or be constructed of safety-grade glass/polymer, and be equipped with a vision strip. Wire glass, if required, would best be replaced with an approved alternative, if cost permits. All glazing should be clear glass. Tinted glass is not recommended except when matching existing glazing, as in a renovation project.

Doors

All door hardware shall comply with the necessary requirements and Life Safety Code. Lever-types appropriate for use by the disabled shall be provided for all door locks and latch-sets. To prevent injury, all doors will have closers that restrict the rate of closure. Doors accessible to children must have hardware operable from both sides, with components having smooth edges and no sharp protrusions. Door openings intended for only adult use shall have hardware installed at adult height. The main entrance doors will be armour-plated, providing a good view of the interior. To meet security requirements, all doors (including both outer and inner lobby doors) are securely lockable and fitted with detecting devices.

Foundation

Strip and trench fill foundations should be reinforced where necessary, to suit localized ground conditions. Reinforcement, if needed, should be clean and free from loose rust and should also be placed correctly. Bars of appropriate sizes should be appropriately supported to guarantee that they are 75mm above the base of the foundation or as indicated in the design. They should be secured at laps and crossings. If in doubt about any soft spots, the Engineer's advice should be taken prior to placing the concrete.

The foundation would be constructed based on the following British standards for construction

• BS 8004 Code of practice for foundations;

• BS 59501 Structural use of steelwork in buildings;

• BS 6399 Loadings for Buildings;

• BS 8103 Structural Design of low rise buildings;
• BS 8110 Structural Use of Concrete.

4.5.2 FINISHES (EXTERIOR AND INTERIOR)

Finishes should feel "home-like." For instance, small scale finish materials such as bricks are typically preferable to large precast panels because the brick's dimension is more congruent with the size of a child and his or her home experience. Finishes should emphasize natural materials, which harmonize a variety of textures, colors, and shapes. Selection of finishes shall be guided by the following:

- Comfort to user
- Life expectancy and degree of maintenance
- Reliability in use
- Aesthetics satisfaction
- Acoustics

Walls

The internal walls of the exhibition gallery will be of reflective paints so as to reduce the rate of absorption of heat, while reflecting off the excess light so as to reduce heat transfer.
Wall finishes in the multipurpose space will be influenced by acoustic requirements. The interior rear wall surfaces shall be finished with 2 inch thick shredded wood fibre board acoustical panels or with type II vinyl wall covering and fabric covered acoustical wall panel for good absorption and diffusion of sound. The lower side walls will be finished with very high grade polished wood finish, while the upper parts would be finished with acoustic plaster or gypsum board. The stage area will be finished with type II vinyl wall covering.

Other structural wall surfaces within the facility would be finished with finely applied plaster and painted in pleasant and suitable colours. For the walls of public and private conveniences, they shall be finished with glazed ceramic wall tiles.
Exterior walls would be adorned with beautiful artistic touch and colorful murals homologous to children. These would go a long way in portraying the building as a children centre.

Floors

Carpet: Most appropriate in quiet areas and crawling spaces. Carpets can retain dust and other allergens to which many children are particularly susceptible. The floors of the multi-purpose

halls, meeting rooms, offices, and the lounges would be thickly overlaid with hard-wearing and beautifully patterned rugs. This would enhance the sound absorption level of the room (due to its high noise reduction coefficient) and add to its aesthetic quality at the same time.

The foyers, staircases, restaurant, and other backstage spaces would be finished with high-quality marble slabs or highly-polished terrazzo floor tiles. Other spaces of a more utilitarian nature, such as storage rooms and pantries, would be finished with regular in-situ cast terrazzo floor finish. The toilets floors would be finished with vitrified tiled floors to withstand frequent wetting and intensive cleaning.

Ceilings

Suspended acoustic tiles or panel ceilings will be extensively used in public areas and conference rooms. Because it is economical, the majority of children's areas will have acoustical ceiling tile, 20 mm to 25 mm thick, with effective acoustical ceiling treatment. Where fluorescent fixtures which are integral with the ceiling must be used because the ceiling is too low for suspended fixtures, 600 mm x 600 mm baffled fixtures will render a less institutional appearance and offer greater flexibility. Where feasible, baffled fixtures should be used. However, the designer should consider the benefits of incorporating other materials which will render a more home-like environment, such as wall board bulkheads and soffits where practical, as well as a variety of lighting type.

CHAPTER FIVE

5.0. THE DESIGN/ DESIGN SYNTHESIS

Design synthesis is a thorough analysis and knitting together of all information gathered from literature reviews, lessons learnt from case studies, general planning principles, standards and space analysis to achieve the stated design goal and objectives. It is a step in the design process in which the multifarious nature of the various design inter-relationships comes to light. The overall design aim of this dissertation is the use of architecture as tool for education and entertainment thus provide a soothing learning experience to children. Hence in this chapter, detailed proposals are given in the understanding of available information analyzed in the previous chapters and is achieved first by formulating a concept.

5.1. DESIGN CONCEPT

Concept formulation, according to Uji (2002) is the process of obtaining an explicable vocabulary of architectural forms and spatial relationships that are a true reflection of the goals and objectives of the client as sought to be represented by the building. According to Synder (1997), "a concept also identifies how various aspects of the requirements for a building can be brought together in a specific thought that directly influences the design and its configurations". White (1979) considers it as "the primary generator, the central theme, or the essence of a problem. The concept of the design for the Children's Edutainment and Exhibition Centre, Awka, is centered on the colour spectrum based on the information gathered about children, their identity, and a clear understanding of their general world view.

The spectrum (plural spectra or spectrums) is a condition that is not limited to a specific set of values but can vary infinitely within a continuum. The word was first used scientifically within the field of optics to describe the rainbow of colours in visible light when separated using a prism. The colour spectrum speaks of two things significantly. There are: radiation or dispersion and variety. The rainbow of colours from the prism connotes variety and these colours have various impacts on child's learning and memory. For example the colour:

Red: increases passion and strong feeling in children

Yellow: is the colour of happiness and sunshine for children. It also stimulates intelligence.

Green: is the colour of abundance. It can relax the nerves and contributes to better health of children.

Blue: reduces blood pressure and enhances creativity

Purple: is ideal for kids attention

Orange: enhances critical and energy

Violet: calms. It can lower heart rate in children.

Thus, the design concept is based on this understanding as it captures the characteristics and view of children that the centre is being designed for.

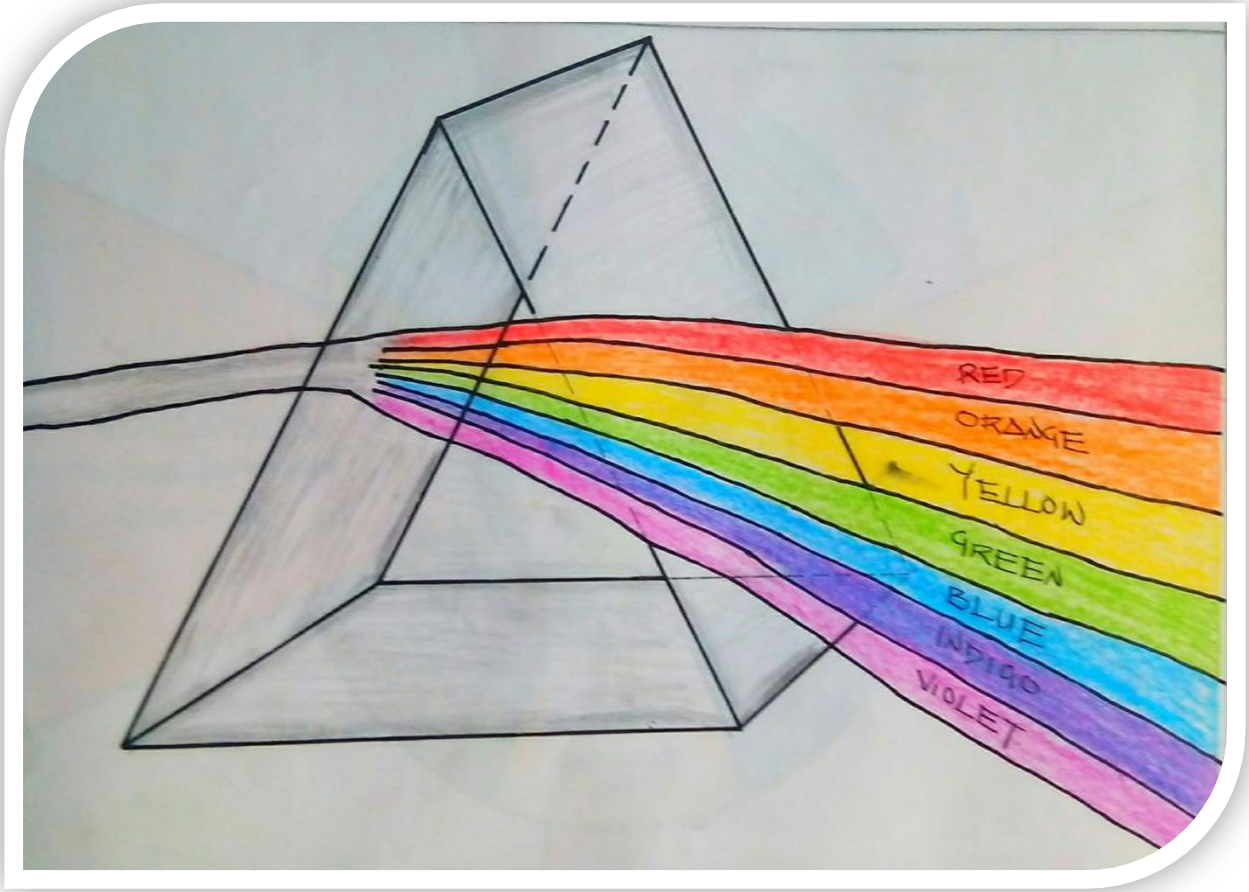

Fig 4.7: The colour spectrum | ***Source**: Author's graphical illustrations, (2016)*

5.1.1. THE BUIDING AS A DYNAMIC EDIFICE

There is an essential difference between the way a viewer interrelates parts in a picture and the way he does so in a building. As one approaches a building, the sequence of sights is constrained by the narrowing range of the image, and since the visitor approaches on the ground level, the entrance of the building is the center toward which the sight converges (this is acknowledged at Amiens cathedral, where the portals of the west façade are really small gothic buildings of their own, each closed off from the rest of the façade by a protruding gable and each enriched by a world of sculptural figures, more than enough to monopolize the viewer's attention). In providing a range of scales, it is important to allow for visual

continuity. A building may be huge a whole, but it can make contact with the visitor by providing a range of sizes, some small enough to be directly relatable to the human body; thus taking into considerations the general architectural principles as discussed earlier- (movement, scale, proportion, focal point, unity, rhythm, etc) . These architectural elements serve as connecting links between humans and their habitation.

5.1.2. THE BUILDING MADE VISIBLE

As Paul Frankl has pointed out, buildings designed to give a clear overview, usually have their architectural elements facing the viewer frontally. Thus in the design of the children centre, the entrance of the building, and the general façade of the building would be grand enough to symbolize the general function of the building.

5.2.0. CONCEPT OF FORM AND MASSING

According to Adolf Benhe (1926), the concept of form refers to "...something deriving from the particular character of the building." the architectural form of a building says a lot about the character of that building and its functions. As stated earlier in one of the previous chapters, the 'form follows function' method of planning and design would be used. Thus, the plan of the building would be gotten through a careful integration of geometrical shapes. In the design of the proposed Children's Edutainment and Exhibition Centre, the plan would be generated through a dynamic articulation of spaces and functions that would in turn produce an overall building mass which is capable of expressing identity relating to children. The structure of the children centre, its appearance and where it is located should provide useful information relating to the general world view of the people around which it is located (in this case Awka).

5.3.0. SYMBOLS THROUGH DYNAMICS

In a well-designed building, there is a structural correspondence between visual properties and functional characteristics. Similar function should be reflected in similar shape; different functions in different shapes. Visual accents should occur in places of importance. Architectural symbolism begins to come into play when a building's design uses shapes that carry a conventional meaning, (such as the 36 columns of the Lincoln memorial in Washington, that refer to the number of states constituting the country at the time of the

president's death). Thus, in the design of the proposed project, some elements homologous to the children would be adopted in creating a functional and aesthetically pleasing facade.

5.4.0. DESIGN CONTRIBUTION

The major contribution of the research to the existing body of knowledge is that it establishes the fact that architecture helps shape human experience and behavior and can be used as an effective tool in education and entertainment.

5.5.0. RECOMMENDATIONS

- Children's centres should be placed on a statutory footing akin to other similar institutions such as schools.
- The core purpose for children's centres should be remodeled around a concept of early intervention so that they become recognized as the 'early help service'.
- Children's centres should be refocused exclusively on providing services to families from conception to a child starting school. However, policy should take a more nuanced view of the 0-5 age group, recognizing the different stages of development and associated need within the age range.
- The structure and commissioning models for children's centres should be re-examined to assess whether they are best designed to deliver the consistency and quality aimed for in centres.

5.6.0. CONCLUSION

This research has dealt extensively on edutainment, and how it could serve as a means of fostering learning through play. In carrying out this research, the researcher carried out a thorough and analytical study of existing children educational and entertaining facilities with a view to ascertaining the basic requirements for the necessary functioning of such facilities. In addition, an extensive review of relevant literature was also done. All these were brought to bear in the effort to realize a design that would speak volumes about a well designed functional child's edutainment and exhibition centre, and how it could be used to expand the mind of children through play. It goes with the fact that architecture can be used as tool for education and entertainment.

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CHILDREN'S EDUTAINMENT AND EXHIBITION CENTRE, AWKA
...USE OF ARCHITECTURE AS TOOL FOR EDUCATION AND ENTERTAINMENT.
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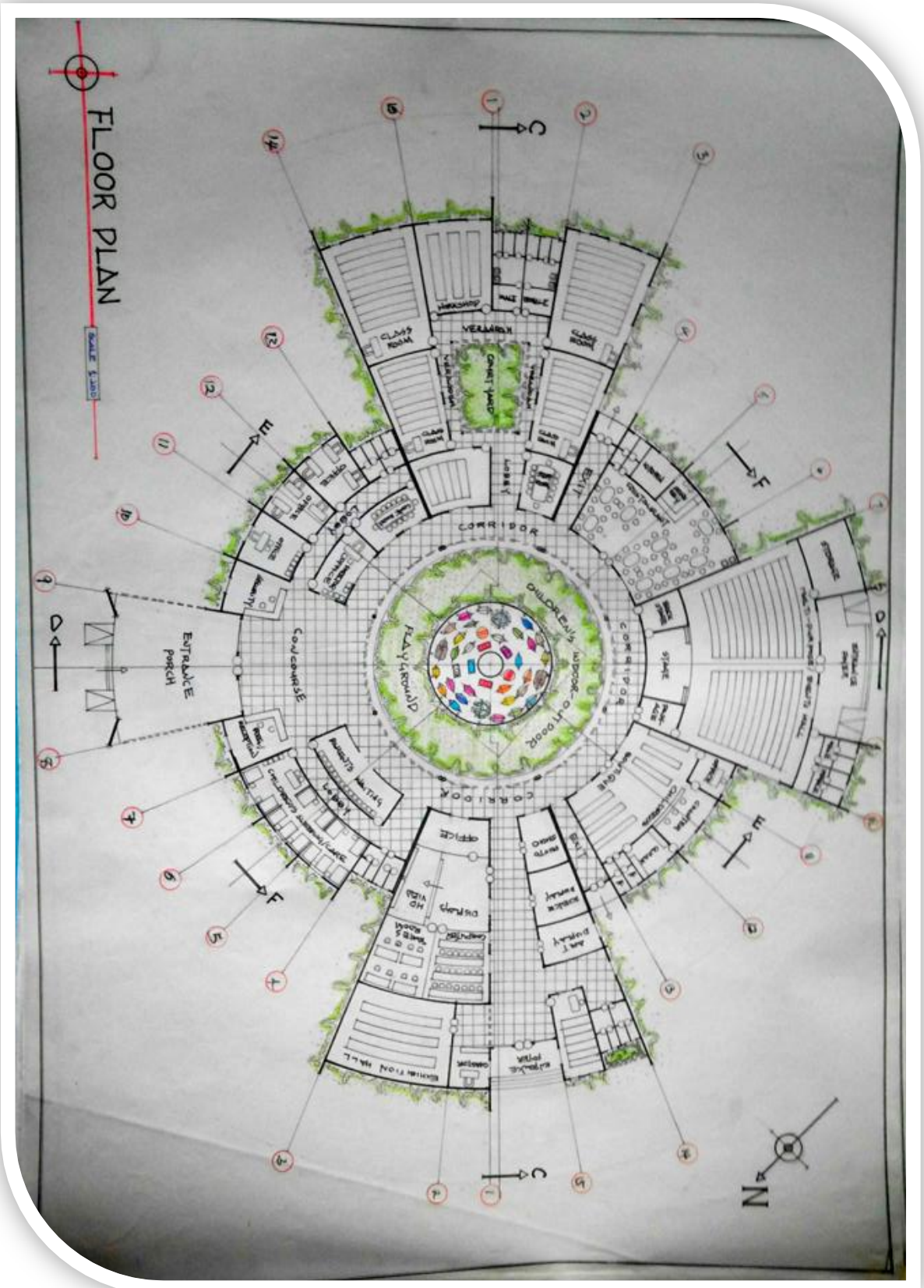
OCTOBER, 2016
SCALE
SITE PLAN
ACCESS ROAD
N
LEGEND
A PROPOSED BUILDING
B CENTURY WHEEL
C OUTDOOR RECREATION
D OUTDOOR PLAYGROUND
E PUBLIC PARKING
F POWER HOUSE
G WASTE DISPOSAL
H CAROUSEL RIDE
I STAFFS PARKING
J VISITORS PARKING
K GATE HOUSE
L FUTURE DEVELOPMENT
PLAY GROUND
1 WATER SLIDE TOWER
2 ARTIFICIAL CURRENT CHANNEL
3 LEISURE POOL
4 RECREATIONAL WATER PARK
5 BRIDGE WITH RAMP
6 DRAMATIC PLAY STRUCTURE
7 TIDAL POOL
8 PIRATE SHIP
9 PICNIC AREA
10 SANDY ZONE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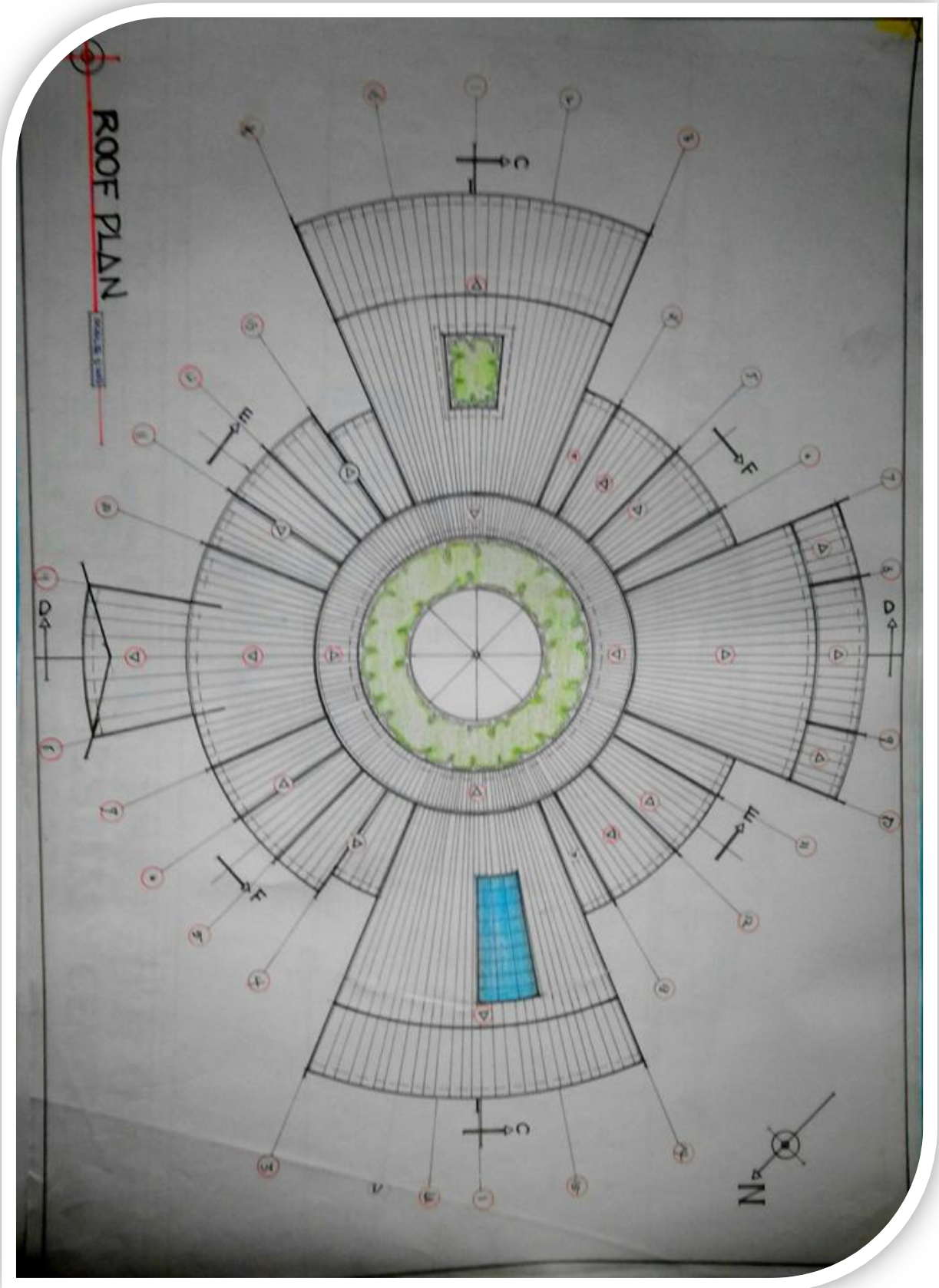
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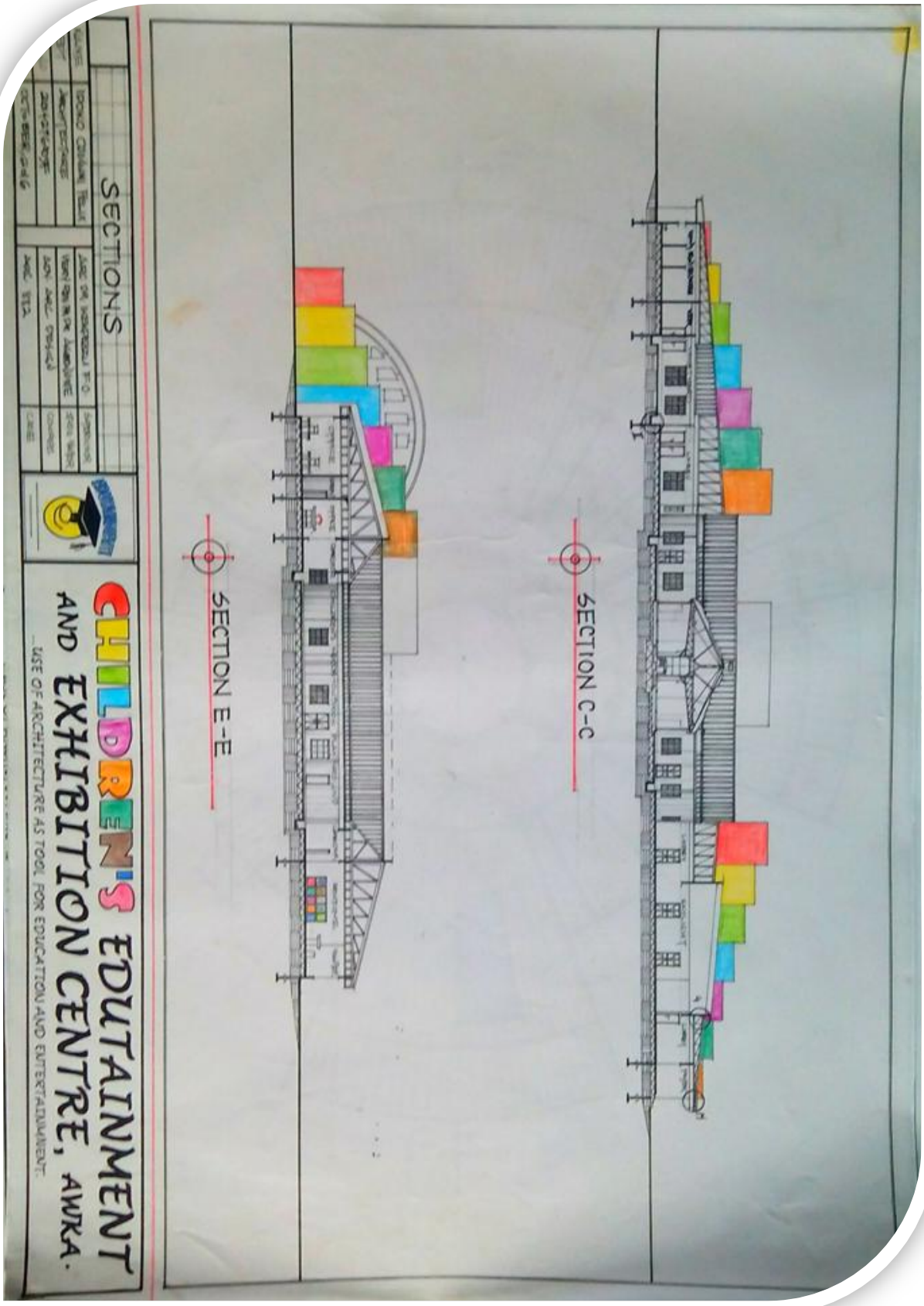
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AND EXHIBITION CENTRE, AWKA
...USE OF ARCHITECTURE AS TOOL FOR EDUCATION AND ENTERTAINMENT.
IDOKO GODWIN FELIX
ARCHITECTURE
OCTOBER, 2016


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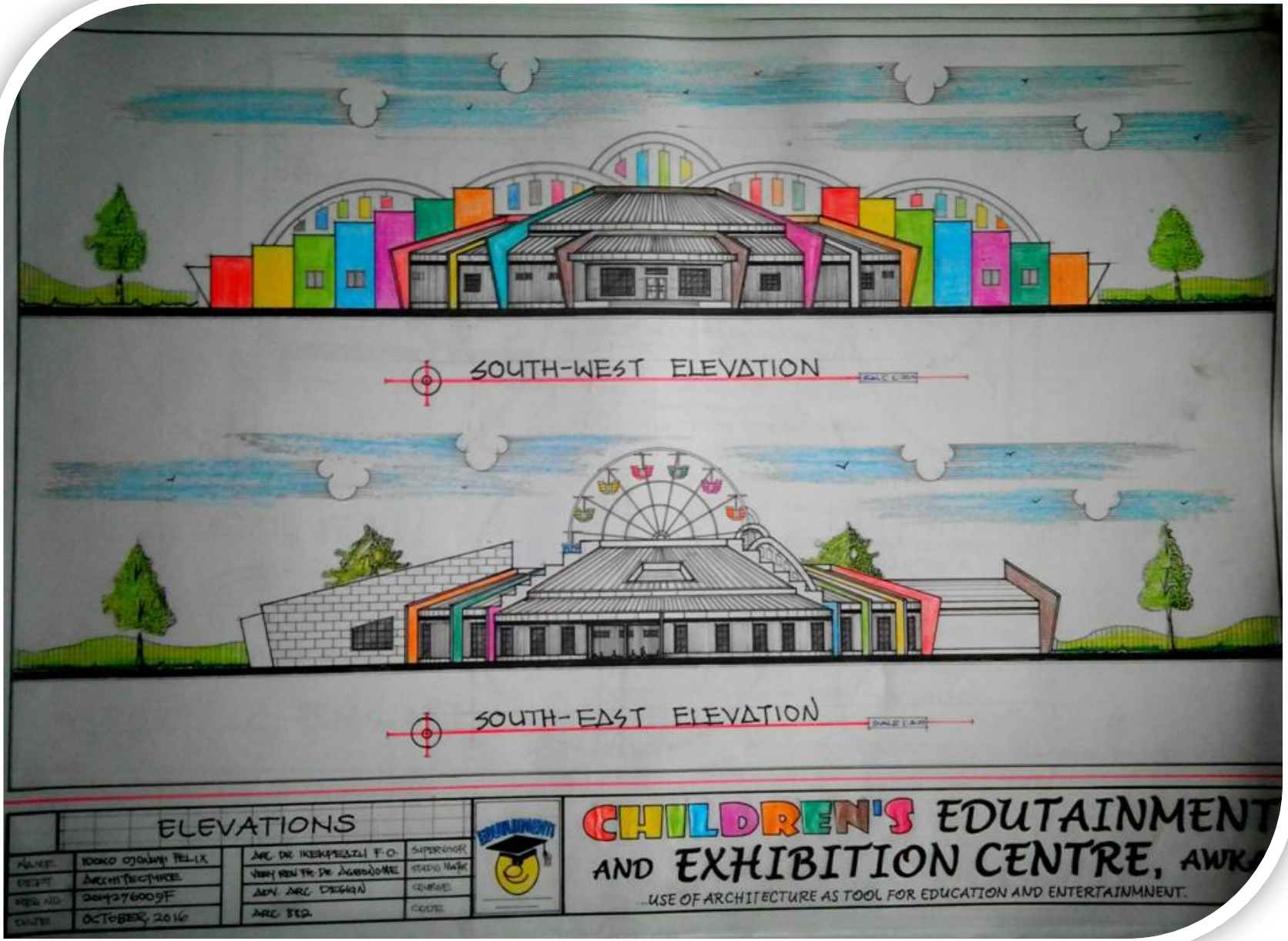
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SUPERVISOR
VERY REV FR DR AGBODIKE
STUDIO MASTER
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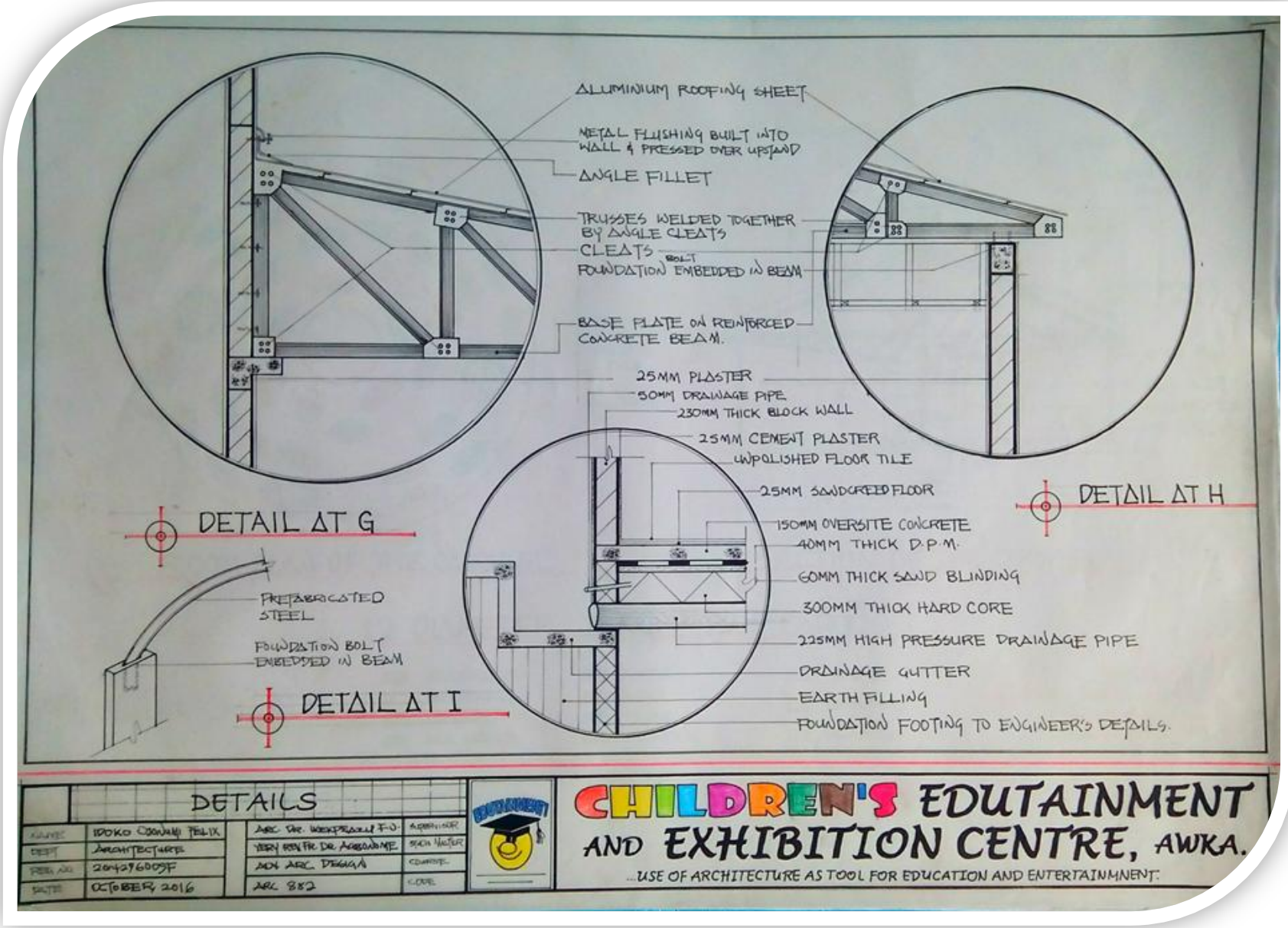
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BASE PLATE ON REINFORCED CONCRETE BEAM.
25MM PLASTER
50MM DRAINAGE PIPE
230MM THICK BLOCK WALL
25MM CEMENT PLASTER
UNPOLISHED FLOOR TILE
25MM SANDCREED FLOOR
150MM OVERSITE CONCRETE
40MM THICK D.P.M.
60MM THICK SAND BLINDING
300MM THICK HARD CORE
225MM HIGH PRESSURE DRAINAGE PIPE
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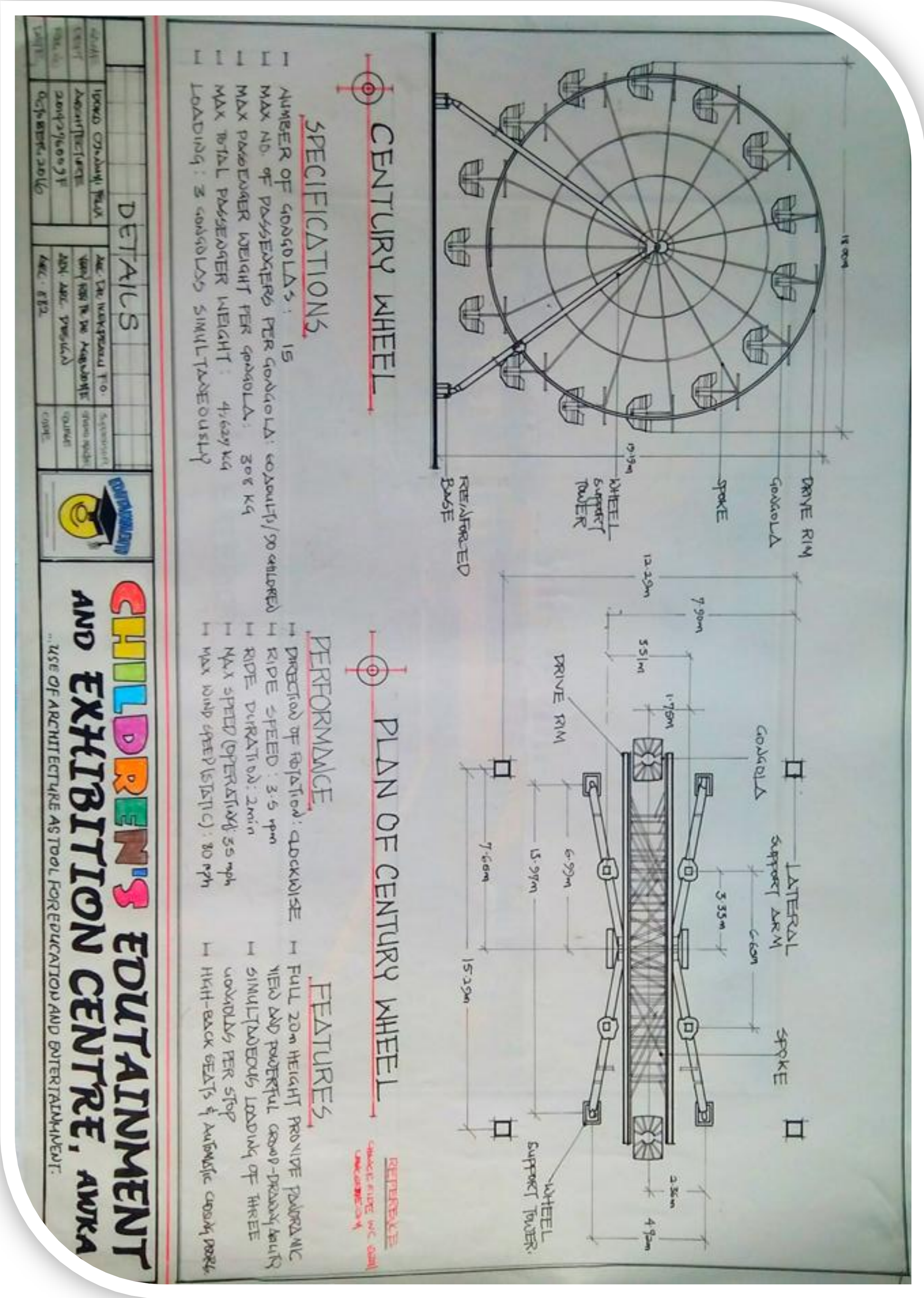
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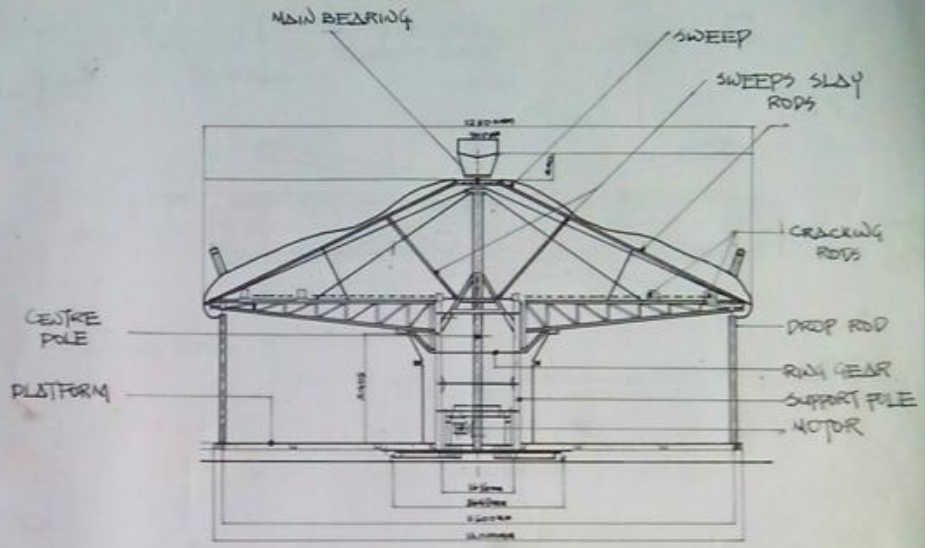

FLOOR PLAN OF THE CAROUSEL

SECTION OF THE CAROUSEL

12 DIAMETER JUNGLELAND CAROUSEL

COLOUR CHART :

- ELEPHANT
- BUTTERFLY
- LEOPARD
- BOA SNAKE
- TIGER
- LION
- MONKEY
- PEACOCK
- ZEBRA
- GIRAFFE
- PANTHER

REFERENCE

— I.E. PARK [illegible]

— RESEARCHER'S GRAPHICAL ILLUSTRATION (2016)

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ARC. DR IKEMEFUNA F.O.	SUPERVISOR
[illegible]	HEAD OF DEPT
ADV. ARC DESIGN	COURSE
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...USE OF ARCHITECTURE AS TOOL FOR EDUCATION AND ENTERTAINMENT.


PERSPECTIVE
EXTERIOR PERSPECTIVE
CHILDREN'S EDUTAINMENT
AND EXHIBITION CENTRE, AWKA.
...USE OF ARCHITECTURE AS TOOL FOR EDUCATION AND ENTERTAINMENT.

EXTERIOR PERSPECTIVE
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...USE OF ARCHITECTURE AS TOOL FOR EDUCATION AND ENTERTAINMNENT.


INTERIOR PERSPECTIVE
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