INTEGRATION OF PEOPLE'S PERCEPTION OF LANDSCAPE IN THE DESIGN OF RECREATIONAL PARKS, MINNA, NIGER STATE, NIGERIA

BY

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ABSTRACT

Perception of any given environment enables one to comprehend and react to stimuli brought about by the environment. As such, the way landscape in recreational parks is perceived evidently affects the satisfaction derived from the recreational experience. Studies have shown that in Minna, people face several problems as regards outdoor recreation of which include inadequate recreational facilities, apathy towards recreation, time constraint, lack of finances and health problems and it is recommended to research the problem from the people's point of view. Thus, the aim of this study is to investigate people's perception of landscape in the design of a recreation park in Minna, Niger State, Nigeria to foster more frequent visits. The research method adopted by this study is the mixed research method whereby both qualitative and quantitative research methods were employed. The sampling method adopted by this study is the Laddering technique where by data was collected in an unstructured manner based on a Means-end theory. The probability sampling technique therefore used as the sample technique for this study. As such, the use of questionnaires and observation schedules were employed to collect primary data from respondents and data about the existing recreational park in Minna. Relevant literature was analysed to bring out key parameters and variables to be measured for the study. Thus, the parameters measured in this study included five perceptual categories (open smooth, open coarse, rivers, agrarian, and structures) which were used to obtain the preferences for landscape settings for recreational park visitors. Also, the six perceptual qualities of landscape features; form, texture, sound, colour, pattern and smell were analysed to examine what respondents considered adds beauty to recreational parks. Hence, the result gotten from the analysis were cross tabulated with various social group factors for further examining. Furthermore, perceptual qualities where categorized based on the two perception modes; the allocentric and autocentric perception modes. It was discovered that the most desired landscape settings were structures, open smooth landscapes and water bodies having the percentiles of 31%, 22%, and 20% respectively. It was also discovered that a statistical relationship exists between gender and the preference for Structures in recreational park design, as the *P*-value of the Pearson's Chi-square test yielded 0.002. The *P*- value of the Pearson's Chi-square test also revealed that, for the Idoma tribe, the perception of form as a landscape perceptual quality is dependent on gender, as the value yielded was 0.03. Thus, it is recommended that recreational park managers and landscape architects should take into account not only the spacial qualities of landscape settings but also perceptual qualities so as to optimize user experience satisfaction in recreational parks design.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Recreational parks are essential to any neighbourhood because it contributes to the general wellbeing of the individuals and the community as a whole. An essential component of any community or residential neighbourhood is the space that is committed and determined to nourish active and passive recreational needs (Olaleye, 2014). Therefore, recreation is an integral part of people's lives in any given society. Recreation is multidimensional, it involves the exercises of physical, cognitive, emotional and social interaction (Broadhurst, 2001). Traditionally, society has proposed that recreation occurs during "leisure time", it is thereby closely related to the concept of leisure (Hailegiorgis, 2017).

Leisure parks, often regarded as recreational parks are basic elements of great ecological and environmental importance. The existence of recreational parks and gardens in various communities help to meet very necessary social and recreational needs in the society (Recreational Park Landscape, 2019). Hailegiorgis (2017) further explained that, for a community or society generally, leisure offers a perfect avenue for the announcement of historical, social and cultural values which in turn promotes desired customs, norms and social orientations. Spaces in recreational parks are known for beautiful landscaping which are done in order to appeal to the eyes of visitors. Landscape features are arranged in ways to draw the attention of people giving them a sense of serenity as they experience the recreational park. Thus, recreational parks serve as a place for relaxation for individuals residing both in and out of locales.

Afolabi and Afolabi (2016) explained that the provision and development of parks have become necessary, particularly in contemporary times when urban centres are progressively being densely developed with little or no spaces for green and play areas. Yfantidou and Anthopoulos (2017) explained that the work life of people is being affected culturally, spiritually, psychologically as a result. Hence, the perception of the environment in which individuals find themselves has an effect on the psychological satisfaction gained. Necka (2011) asserted that every act of creation is influenced by perception, the way things are perceived by people determines the thoughts of people about the subjects. Thus, there is a growing need to have the presence of recreational parks in communities. Walker (2004) reinforced this view by emphasising that with the increase in psychological stress levels in contemporary life, parks have great recreational benefits and provide a place to enjoy fresh air and exercise. People find recreational parks the perfect fit for leisure because it serves as an avenue to escape from stress, a place to spend time with loved ones and to enjoy scenic views.

In an investigation on the effect of recreational parks on park's visitors, a significant correlation was found between use of the parks and observed state of health of people: people who used local parks frequently were more probable to report good health than those who do not (Godbey *et al.*, 1992). Thus, Officha *et al.* (2013) further explained that recreational parks that are well designed and landscaped, properly managed and found within residential areas can serve as play area for children, shared spaces, and a serene environment which adds to the quality of life and well-being of residents in that locale. Schroeder (1991) revealed that natural environments with vegetation and water prompt tranquil and relaxed states compared with urban environments without any form of soft landscape. This capacity of natural elements to function as "natural

tranquillizers" may be specifically valuable in urban regions where stress is an all-too-common aspect of daily living (Van den Berg *et al.,* 1998). Natural landscape and features, besides having aesthetic, mental and health benefits, have social benefits included. Nature can encourage the use of outdoor spaces, increases social integration and interaction among neighbours (Coley *et al.,* 1997). Thus, nature is believed to have a positive influence on the health of individuals.

Perhaps, in recreational parks design, the landscaping should be considered as staple component. This is as a result of the undisputable connection between nature with the mental and physical health of recreational park goers. The incorporation of landscape features in recreational parks should be well-thought-out, but not without being compatible with people's perception of these landscape features for recreational park designs.

1.2 Statement of the Research Problem

Recreational parks are known to be of numerous benefits to individuals and communities at large. In a study done to assess the behaviour and preferences of Minna city dwellers to outdoor recreation by AbdRazack *et al.* (2013), it was revealed that majority of the respondents (92.4%) indicated that they faced many different problems in outdoor recreational areas which includes; inadequate recreational facilities, apathy towards recreation, time constraint, lack of finances and health problems. Hence, these problems result in limited visits to recreational parks . It was recommended to understand the problems in existing outdoor recreation in Minna from people's point of view. With all the benefits users stand to obtain by visiting recreational parks, it is thus

noteworthy to investigate these problems posed to recreational park goers so as to facilitate more frequent visits.

1.3 Aim and Objectives

The following section describes the aim and objectives of this study which focusing on integrating people's perception of landscape in the designof recreational park.

1.3.1 Aim

The aim of this study is to assess people's perception on the use of landscape elements and integrate in the design of a recreation park, in Minna, Niger State, Nigeria.

1.3.2 Objectives

The objective of this study is to:

i. Investigate people's perception of landscape in recreational parks in Minna, Niger State.
ii. Evaluate the performance of landscape features in recreational parks located at Minna, Niger State.
iii. Integrate the outcome of people's perception of landscape in the design of recreational park in Minna, Niger State, Nigeria.

1.4 Research Justification

The designs of structures, facilities and spaces meant to be used by people should have the users involved from the inception stage in order to aid efficient, adequate and a rewarding use. The American Society of Landscape Architects thus advocate that an exposed, participatory design process can produce a healthier environment and

communities of better quality. Public contribution aids in identifying issues vital to communities and contribute to the creation of suitable planning, design, and management solutions (Public Participation, 2008). Futhermore, Hansen (2016) explain that the study of landscape involve both the material, which is the physical properties of landscape and the immaterial landscape properties which involves human values and perception. Therefore, it is imperative to investigate and incorporate people's perception of landscape in the design of recreational parks.

1.5 Scope of Work

This study seeks to address the issue of the underutilization of recreational parks in Minna, Niger State, by investigating people's perception of landscape in the design of recreational parks based on various perception categories. These perception categories include autocentric and allocentric perception. Also, the factors influencing perceptions such as preferences, association and memories was investigated based on landscape perception in recreational parks.

1.6 Contribution to the Body of Knowledge

This research seeks to contribute to the body of knowledge of research by investigating the perception of landscape and the factors affecting and influencing people's perception of landscape in recreational park design. Amongst the factors discovered to influence people's perception of landscape, the basic perceptual modes for landscape settings were investigated across various social group factors. The findings are thus employable in the design of recreational parks.

1.7 Study Area

The study area is Minna, Niger State. Accroding to Niger State (2020), there are three major ethnicites found in Minna, these include the Nupe, Hausa and Gbagyi tribes. Other ethnicites found in Niger State include Kadara, Koro, Baraba, Kakanda, Ganagana, Dibo, Kambari, Kamuku, Pangu, Dukkawa, Gwada and Ingwai. The people of Niger State engage in farming activities having a percentage of 85% of the total population. Other occupations which make up the remaining 15% include Businesses, arts and crafts and white collar jobs. Having the asset of vast fertile land and mineral resources like gold, copper, iron, lead, marble and silica, Niger state is acknowledged to possees great economic potential. The city of Minna comprises both the administrative capital and headquarters of Niger State and Chanchaga Local Government, having a land area of over 1,000 hectars (Abdulrazack, *et al.*, 2013).

Minna is the capital city of Niger State, as a result this has attracted a population increase over the years. Consequently, the population of Niger state has increased from 3,954,772 in 2006 to about 5,556,247 in 2016 (National Population Estimates 2006). According to Abdulrazack, *et al.*, (2013), the people of Minna include migrants and the male working age distribution constituting a higher percentage of the population. In 1976, according to Muhammad (2012), Niger State was created out of the North-Western State of Nigeria. Niger State in 2006, had a population estimate of 3,954,772 which was considered to be the second highest after Benue State in the North Central zone.

Muhammad (2012), further explained that Niger State has a total of twenty-five local government areas which, for administrative convinience, is sectioned into eight emirates of the long-standing traditonal political systems. The emirates are predominantly

occupied by the three major ethnicities, Nupe, Hausa and Gbagyi. These emirates include Bida, Lapai and Agaie in which the Nupe ethnicity predominantly reside; Borgu, Kagara and Kontagora in which the Hausa ethnicities predominantly reside; Minna and Suleja is predominantly occupied by the Gbagyi tribe. Though Minna is predominantly occupaied by the Gbagyi tribe, other tribes in Nigeria reside in the city, making Minna a heterogeneous city (Abdulrazack, *et al.,* 2013). The ratio of the populations of the three major ethnicites in Niger State; the Nupe, Hausa and Gbagyi are 10:8:7 approximately. Thus, this gives an idea of the relative strength of the three major ethnicities in Minna, Niger State (Muhammad, 2012).

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 The View of Recreational Parks

The view of recreational parks exceeds the conventional value of parks and considers the broader contributions that recreational parks can make to the vitality and wellbeing of communities and residents in which the recreational parks are found. This view also focuses on how policymakers, practitioners and the public can consider parks as valuable contributors to larger urban policy objectives such as job opportunities, youth development, public health, and community building (Walker, 2004). Leisure and recreation facilities, services and the environment itself encourage people to keep healthy, have fun, feel good, maintain independence in old age, and preventing illness and disease (Hailegiorgis, 2017).

According to Dierig (1999), recreational parks and open spaces are valuable resources. Recreational parks help improve the quality of life in urban areas, have essential environmental functions and, by increasing the attractiveness of the places in which people live and work, can be of economic benefits. By bringing people together, recreational parks tend to strengthen the bond between residents of the community, allowing them to put aside ethnic, racial or income level differences which enables them join forces to work on common projects. According to Schneider (2017), these ties or bonds are frequently regarded as “social capital”, which signifies understated but vital assets for communities. Recreational parks thus provide avenues through which information, values, and social expectations flow, and they empower people to tackle community wide problems, embark on collective actions, and advocate effectively for their community (Hailegiorgis, 2017). The provision of adequate public recreational

facilities has helped a great deal in keeping large numbers of the idle youths out of trouble by making a profession out of the skills they learn from playing games and using facilities in public recreational parks (Muhammad, 2010).

Yfantidou and Anthopoulos (2017) highlighted that the active mode of urbanization in the contemporary world is described by urban renewal projects to be of a large scale, which are set up with little or no consideration given to social predicaments. Thus, Wilkinson (2008) asserted that parks and green spaces play a vital role in helping children and young people learn a variety of skills through play and social interaction. In addition to this, Hailegiorgis (2017) further explained that recreational parks are also increasingly used as an outdoor classroom for school subjects such as environmental studies and provide valuable venues for research projects.

Being deprived of the natural environment, people visit recreational parks more so because it serves as a place to meet with nature. Reinforcing this view, Gogniat (2007) explained that a deep gap has flourished between humans and nature because of the changes brought about by the industrial revolution on human life. Consequently, recreational parks aid in the renewal of the relationship between urban residents and the natural world. Therefore, it can be noted that recreational parks help to improve the quality of life of individuals and communities, creating opportunities for health, social and economic benefits. Amongst these benefits is one which is of valuable importance to people, and this is the fact that recreational parks serve as an avenue to interact with nature.

2.2 The Relationship Between Humans and Natural Landscapes

Landscape, as a term, has been subject to a wide range of disciplines such as art, history, geography, ecology, politics, planning and design. Although, it has been associated with mainly physical features of an environment, today the term landscape refers to much more than just scenery. Landscape is a complex phenomenon which evolves continuously through time and location. It is a reflection of both natural processes and cultural changes throughout time (Kaymaz, 2012).

It is no folklore to say that a relationship exists between people and nature thus, numerous studies have been done on the subject matter. In a study done on the concept of a restorative environment, Kaplan (1992) asserted that early human beings were considered an intricate fragment of nature. Therefore, Kaymaz (2012) explained that there is a mutual relationship between an individual and the surrounding environment. According to Kellert (1997), a fundamental human dependence on nature exists, and it encompasses intellectual, physical and an emotional form of dependence. Vining *et al.,* (2019) explained that legislations endorsed in many developed countries to keep human influences from natural landforms and the conquest of nature has stimulated the thought that nature is sacred. Thus, humans have a natural tendency to prefer the natural landscape to the built-up environment, particularly when the latter offers a complete lack of vegetation and waterbodies. Many people who are under stress seek solace in the natural environment, which is believed to make them feel better. Schroeder (1991) explained that natural environments create a tranquil and a relaxed condition as opposed to urban environments characterized by an absence of natural landscape. Hence, there is a need to understand what the benefit of natural landscape embodies.

In a study on understanding recreational landscape, Hansen (2016) highlighted the necessity to study both material and immaterial landscape. Material landscape here, is described as the biophysical qualities of landscape while immaterial landscape qualities referred as qualities of natural landscape based on human perspective and perception. As such, Le Berre *et al.* (2013) explained that in monitoring biophysical qualities aimed at protecting and conserving these qualities for recreational parks, it is important not only to focus on the qualities of natural landscape itself, but also on the human relationship with the nature. These human qualities include meanings and values. Thus, Strickland-Munro *et al.* (2015) reinforced that it is vital for recreational park managers to examine both material and immaterial landscape qualities, on the basis of having a comprehensive understanding of landscape and to have a wider approach in monitoring landscape.

Williams and Vaske (2003) further concluded that the condition to understanding landscape should be of the acknowledgment that natural landscapes are beyond vessels of natural resources and settings for recreational activities. However, landscapes should also be considered as locations that comprise of history, memories, emotional and symbolic meanings to humans. This concept is likened to a landscape theory where by landscape is said to entail symbolic content and values which occur as a result of human interaction with the environments (Hansen, 2016). According to Ingold (2000), this view also bears similarity to a phenomenological based landscape understanding which accentuates that people experience the world via a rationalized practical engagement with the environment. Hansen (2016) then emphasized that the attitude and choice of usage of a given landscape setting for recreation is determined by the meanings and value attributed by humans. Furthermore, Povilanskas *et al.* (2016) explained that the

human experience and perception of a given landscape setting and the value and meaning attributed, always leads to an understanding of that landscape setting. As such, this understanding of a landscape setting, derived from the value and meaning of the landscape, thus guides human actions and activities. Human activities as regards recreation are a factor of the meanings and value derived from the experience of a given landscape setting. Hence, it is noteworthy to investigate and examine the immaterial characterization of landscape which is thereby influenced by what is understood and perceived as landscape.

2.3 The Role of the Human Brain as Regards Perception

Perception is described as the way of recognizing and interpreting information that have been gathered through human senses (Essays, 2017). According to Necka (2011), perception first begins with sensory registration of the information and concludes with mental constructions and representations of the object being perceived. Hence, Kolb and Whishaw (2015), explained that the senses gather information from the external environment to the brain via the nerve cells, which then filters and process the information and sends back a reaction or an action to be carried out. The brain and the spinal are both enclosed within protective bone coverings known as the skull and the vertebra, and together they are called the central nervous system or CNS (American Association of Neurological Surgeons, 2020). The central nervous system is connected to the rest of the body through nerve fibres which carry information from and to the central nervous system. The nerve fibres are known to be the peripheral nervous system, as they serve as an essential link between the central nervous system and the body of a human (Kolb and Whishaw, 2015).

According to Medina (2009), the brain is divided into various parts depending on their functions, but the forebrain is the part of the brain that plays a key-role in the control of motivated behaviour such as movement control and decision making. Neuropsychologists commonly refer to functions of the forebrain as being higher functions because they include thinking, perception, and planning (Kolb and Whishaw, 2015). The forebrain consists of the cerebral cortex and the Limbic system which form a combined structure that involves emotions, motivation, learning, memory and contain the brain's most sophisticated brain centres (Kim, 2018). Hence, forebrain is the brain region responsible for conscious thoughts, memories, learning capabilities, emotion, and social behaviour (Medina, 2009). Therefore, it is noteworthy to conclude that the nerve fibres found on the skin serve as receptors of stimuli and then transfers the information to the brain, the forebrain then makes it possible for humans to comprehend and have perceptions about the environment.

2.4 Human Perception of the Environment

Necka (2011) explained that perception begins with a sensory registration of the information gathered via sensory organs and ends with the construction of mental depictions of the object being perceived. Perception is at the core of environmental behaviour because it is the store house of the interaction that occurs between humans and the external environment (Proshansky *et al.*, 1970). In a study geared towards Situated Cognition and the Phenomenology of Place, Seamon (2015) explained that in the view of a lifeworld of typical attributes, the makings of place, materiality and spatiality precisely resonate with people and thereby expresses and prompts immediate actions and meanings. Though usually done at an unstated, unconscious level of awareness that phenomenological effort attempts to interpret intuitively. This is to say

that perception of inanimate or animate objects found in the environment typically occurs instantaneously and at a subconscious level. Hence, Schachtel (1959) postulated that there are two basic modes of perception, the autocentric and allocentric Perception modes.

Autocentric perception is described by Porteous (1996) as being subject centred involving sensory quality and pleasure. Hence, vision, excluding the perception of colour is labelled as autocentric (Porteous, 1996). Numerous studies have been done on the various modes of perception. Thus, Schachtel (1959) explained that autocentric perception is solely about how the subject or perceiver feels which has little or no quality of objectification. The perceiver simply reacts to the object instantaneously and decides whether or not it is acceptable, rather than engaging with the object. This phenomenon can be likened to the concept of internalism. Internalism, as highlighted by Démuth (2016), suggests an explanation for the existence of intuitive and innate cognition. Internalists are persuaded that within the subject, pieces and source of knowledge can be found and cognition is no other than discovering or developing already existing knowledge found within the subject. Therefore, autocentric perception is characterized to be of lower senses such as smell, pain, taste, touch and also proprioception (Schachtel, 1959).

Allocentric perception on the other hand is object centred. Allocentric perception involving attention and directionality as such, sound, except speech sound is classified as allocentric perception (Porteous, 1996). For allocentric perception, the perceiver examines the object actively and if a tangible object, holds, grasp or tries it to understand the object. Here also, another approach is considered which is likened to

allocentric perception explaining how knowledge and perception is derived, is the externalism approach. In this approach, externalists assert that a blank sheet of paper can be equated to the mind (tabula rasa) of humans and from an external reality, all knowledge is imprinted on the mind (Démuth, 2013). That is to say, the mind of humans does not create meanings from within, about the environment, but rather gets meanings about the environment externally. Hence, people tend to see things as they are or appear to be and do not conceive meaning for them like the internalism approach.

As highlighted by Schachtel (1959), allocentric perception is characterized to be of higher senses such as sight and hearing, thus, sight, being the highest and most developed of the human senses, is characterized by objectification. Sight allows one to grasp many features of any object simultaneous unlike the autocentric senses which have one dimensional quality, they do not reveal the structure or quantity of an object. Izard (2013) explained that while tasting, it is difficult to quantify the food composition as opposed to sight that can effortlessly tell the composition and quantity of objects. Necka (2011) gave another comprehensive comparison between autocentric perception and allocentric perception. This stated that the autocentric perception of a laptop computer would focus on the function of the computer, the usefulness of the computer to humans and the potential to be enhanced as a better tool for humans. On the other hand, Necka (2011) explained that the allocentric perception would focus on the traits of the laptop going beyond functions that are human centred. Hence, allocentric perception considers the laptop as it is and not its use as a tool for human activities.

In a different light, Schachtel, (1959), discussed that allocentric senses (higher senses such as sight and sound) are capable of autocentricity but to a limited extent, and

autocentric senses (lower senses) are capable of, but also to limited degree, allocentricity. Thus, it can be noted allocentric perception mode (allocentricity) predominantly functions in allocentric senses and recessively in autocentric senses. And the same phenomenon occurs in autocentricity which functions predominantly in autocentric senses and recessively in allocentric senses. Schachtel, (1959), observing that allocentric perception involves the use of higher human senses, asserted that allocentric perception is thus responsible for creativity, specifically in the fine arts. Necka (2011) concluded further that nature is more prone to be perceived in the light of allocentric perception mode than in autocentric perception mode.

Therefore, understanding that human perception differs and to properly comprehend the concept of perception, studies have shown that human perception can be recognized as either of the two basic modes of perception. These fundamental human perceptions modes are the autocentric and allocentric perception modes. thus, these perception modes are responsible for character traits like creativity, and the ability to derive satisfaction from nature. As such, it is argued that the perception of natural landscape specifically, is more likely to be associated with allocentric than autocentric perception mode (Necka, 2011). It is thus needful to investigate substantially, human perception of landscape.

2.5 Human Perception of Landscape

Perception of any given environment enables one to comprehend and react to stimuli brought about by the environment. People of different social and cultural backgrounds use and perceive urban landscape in different ways (Priego *et al.,* 2008). And thus, Carmona *et al.,* (2003), explained that the differences in environmental perception

depend on factors such as age, gender, ethnicity, lifestyle, length of stay in an area, physical, cultural and social environments. Because people come from various backgrounds, the manner in which the landscape is perceived differs based on the two basic perception modes (autocentric and allocentric perceptions). In past times, researchers have sought to investigate landscape perception based on different cultural backgrounds. In a study done by Herzog *et al.* (2000), to investigate the perception of Australian natural landscapes by American and Australian respondents, findings showed that preference correlations between cultures were on the high side. This study generally yielded six perceptual categories of landscape features (vegetation, open smooth, open coarse, rivers, agrarian, and structures). Priego *et al.* (2008) also conducted a study on perception use and the behaviour of people from Chile, Germany and Spain in various urban landscapes, it was concluded that people do perceive landscape differently.

The differences in perception of landscape varied due to the influence of various social, physical and environmental factors, supporting the findings highlighted by Carmona *et al.,* (2003). Matijosaitiene (2011) explained that among others, the differences in landscape perception can be revealed in different social groups like age, ethnicity, place of residence (urban or rural), gender, education (high or elementary school) and occupation.

Therefore, landscape and environmental perception differs with people as it is influence by a multiple of social group factors, and these factors contribute to the character of landscape. The landscape character of a place has social, community, cultural and economic value because it provides settings for economic activities, as in the case of

tourist centres, and contributes to a sense of identity, well-being, relaxation and inspiration (Swanwick, 2002).

In a study done to separate the classification and description of landscape character and to understand what makes one area of landscape distinct from another, Swanwick (2002) explained that there were certain elements that characterize the landscape of an area. These elements included perception and aesthetics, social and cultural factors and natural factors. Swanwick (2002) further highlighted the elements that contribute to the character of landscape. Figure 2.1 shows a pictorial representation of the factors and components that determine the landscape character of a place.

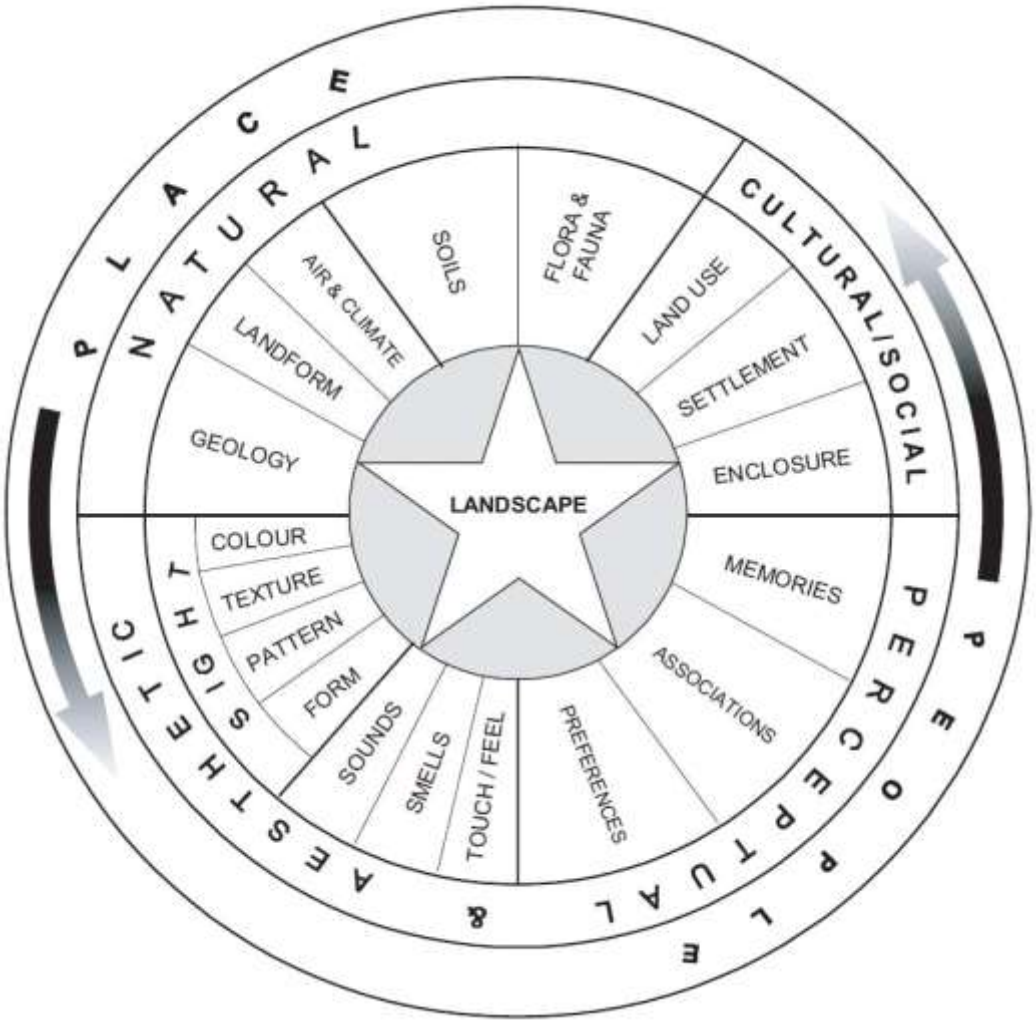

Figure 2.1: Factors and components influencing landscape character
Source: Swanwick (2002)

Landscape can be characterised based on the interaction between different components of our environment. As highlighted by Swanwick (2002), landscape is derived from the manner in which various components of the environment - both natural and cultural land use relate with one another and are perceived by people. Thus, the natural land use includes the influences of landform, climate, soils, geology, plants and animals on the landscape of a particular location. Cultural land use involves the past and current impact of land use, the pattern of settlement, and other human interventions. Hence, these components influence the landscape character of a place and consequently, what is perceived by people. From Figure 2.1, landscape perception was grouped into various components, such as memories, associations, and preferences. As such, senses involved to the two basic modes of perception were also mentioned as determining factors as to how landscape is perceived. Hence, senses like touch, sound, smell and sight are a basis on how the landscape character of a place is perceived by humans.

In a study done on the research, application and theory of landscape perception, Zube *et al.* (1982) gave a relationship between humans and landscape. The study was founded on the notion that landscape perception is created based on the interaction between humans and landscape components. Hence, Zube *et al.* (1982) explained that the human component encompasses experience, knowledge, expectations, and the socio-cultural context of a group of people and individuals. Whereas, landscape components included both singular elements and landscape as entities. It was emphasised that landscape perception was characterized based on the interaction between human and landscape

which inevitably results in outcomes. Those outcomes in turn, affect the human and landscape as subjects.

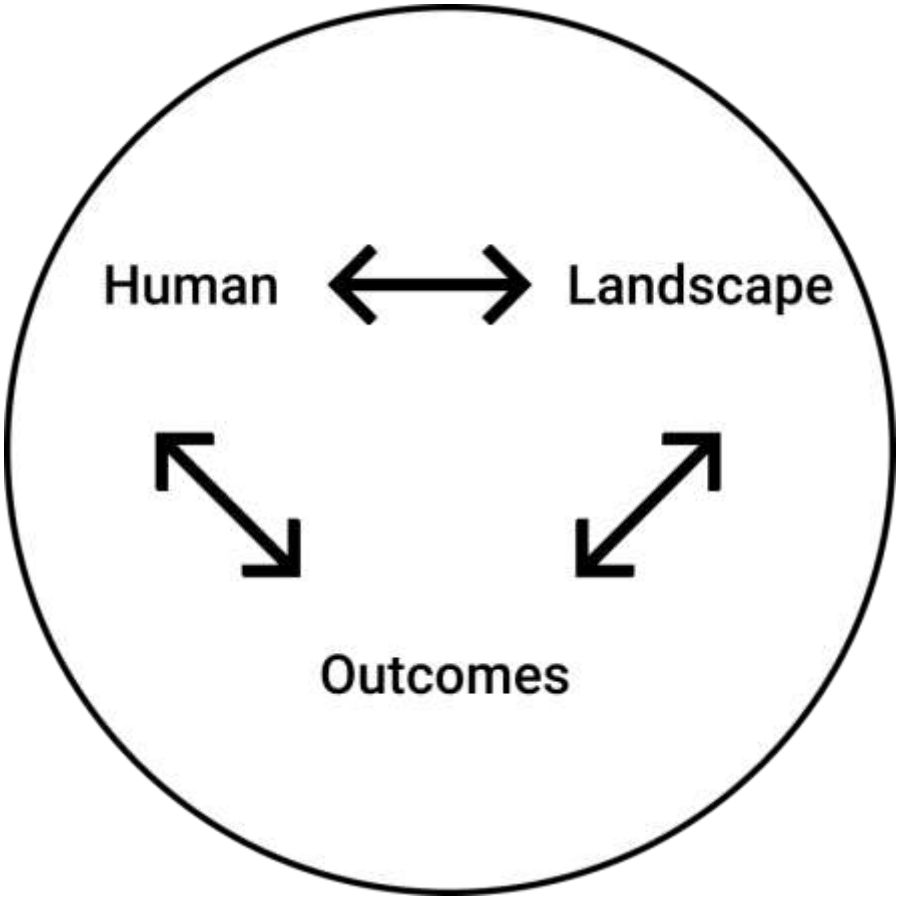

Figure 2.2: Model of landscape perception
Source: Zube *et al.* (1982)

Figure 2.2 shows a model of landscape perception. Considering the studies done by Dewey and Bentley (1949), Ittelson and Cantril (1954) and Zube *et al.* (1975), the three elements (human, landscape and outcomes) were used in analysing journals based on landscape perceptions to generate the model of landscape perception. In this model, the perception of landscape is deliberated as a function of the interaction between humans and the landscape. The human concept, in this context, is not merely the nature of the side of humanity interacting with the landscape, but also the interaction in itself. Zube *et al.* (1982) distinguished that the human concept is the particular feature of humanity that is satisfied or interested in interactions with landscape. As such, the human concept

regarding the model of landscape perception encompasses every part of humans that derives satisfaction from the interaction with landscape.

The contribution of landscape, in this model, may be observed as physical features such as composition and form or landscape features such as scale, complexity, naturalism or gestalt, all in the light of perceptual interaction. That is those tangible or intangible elements or relationships in the landscape that are necessary for interaction with humans. Consequently, an outcome is derived from the human-landscape perceptual interaction. This product resulting from the interaction between humans and landscape could be either tangible or intangible. A tangible outcome is seen as a change in physical state of landscape features while an intangible is represented as a change in the state of mind of the human or a feeling of satisfaction or of personal achievement, after interaction. Thus, landscape perception is the combination of human-landscape perceptual interaction and outcomes that produces tangible results, in the case of the landscape features or, intangible results experienced by human.

Zube *et al.*, (1982), to further investigate landscape perception, developed theoritical approaches to examine the relationship between the three components of the landscape perception model. This yeilded research paradigms which were generated based on the analyses of major study directions as regards the landscape perception model. These paradigms were categorised based on the approach to researching the character and perception of landscape, and thus included: the Expert, Psychophysical, Cognitive, experiential paradigms. Thus, Figure 2.3 expresses the theoritical approaches to investigating the landscape perception research according to the landscape perception model.

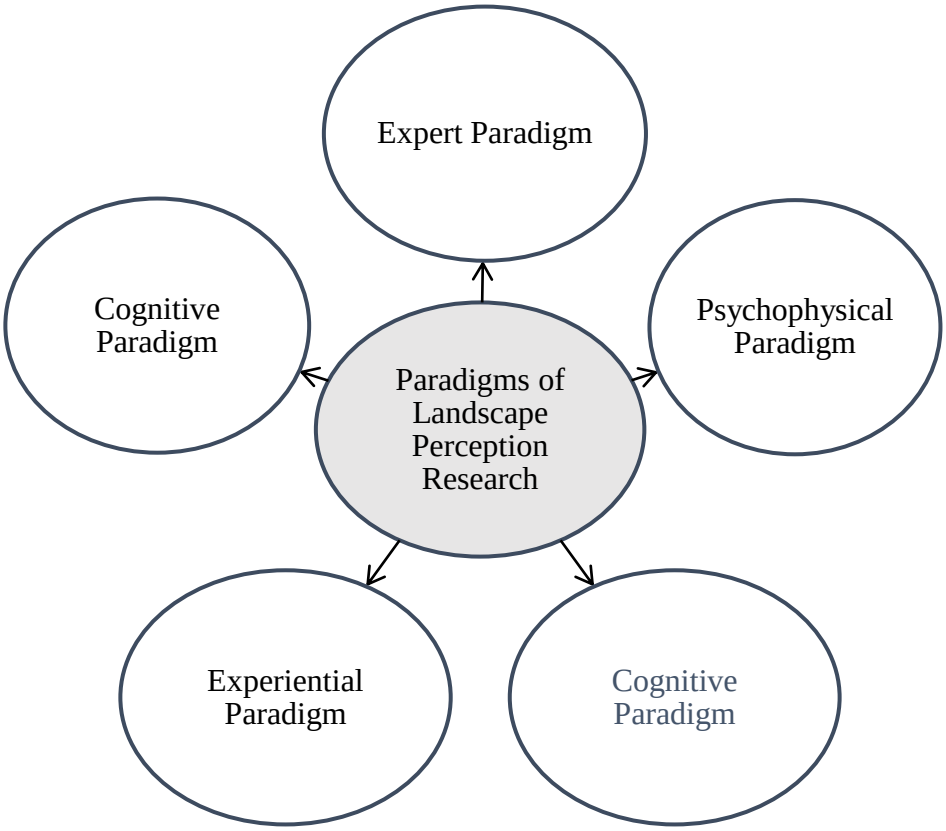

Figure 2.3: Paradigms of landscape perception research
Source: Adopted from Zube *et al.* (1982)

Thus, it can be observed from figure 3.3 that landscape research is categorised into five paradigms which aid in an effective examination of the relationship between humans and landscape elements. These are discussed in the following sections.

2.5.1 The expert paradigm

The expert paradigm includes the examination of landscape qualities by observers that are skilled or trained in this field. Fairweather and Swaffield, (2000), explained that such skills develop from the training and practice of design and art, including specialty in resource management (where wise resource movement skills are assumed to embody essential aesthetic effects) or ecology. Falade (1985) highlighted that designers, writers and artists, having undergone professional training have beome more informed to the

concept of what is considered ‘beautiful or ugly’. Thus, this understanding gives designers, artists and writers an edge over non-professionals as regards landscape quality.

2.5.2 The psychophysical paradigm

The psychophysical Paradigm expresses a valuation of landscape aesthetic properties or particular landscape features by investigating the general public or selected population’s opinion on the subject (Salaudeen, 2011). According to Obembe (2009), the properties of the landscape feature are presumed to have a stimulus-response relationship or are associated with the appraisals and behaviour of observers. This paradigm gives account to the notion that landscape properties and features have an effect on people’s evaluation, perception and behaviour after contact. Thus, Obembe (2009) concluded that the outcome or result of the interaction between humans and landscape are statistically proven measurements of people’s perception of landscape qualities, which can be manipulated or altered by designers or resource managers.

2.5.3 The cognitive paradigm

The main thought about the cognitive paradigm is that, unlike the psychophysical paradigm, humans percieve landscape qualities though a process of selective thinking. (Jackson, 2001). According to Zube *et al.* (1982) Cognitive paradigm entails exploring landscape properties associated with human meaning. In this paradigm, a human observer

receives information from the view point of sociocultural conditioning, past experience and future expectation, which is then projected towards meaning of landscape. Hence, the interpretation of landscape and landscape features is governed by the influence of

sociocultural elements, past experiences and future expectations as regards landscape features.

2.5.4 The experiential paradigm

For the experiential paradigm, landscape values are deliberated based on the result of the human-landscape interaction, in such a way that both landscape and humans are being shaped during the interaction process itself (Lowenthal, 2007). According to Salaudeen *et al.* (2018), for the experiential paradigm, humans do not act as observers but rather participants, whereby a comprehension of landscape values is based on the interactions between humans and landscape and the changes that occur as a result.

Zube *et al.* (1982), in the review and analysis of study directions on landscape perception, generated a relationship between the paradigms of research and the model of landscape perception. This relationship is shown in the table below.

Table 2.1 Relationship between landscape perception model elements and the landscape perception research paradigms

	Expert	Psychophysical	Cognitive	Experiential
Human Model	Elite, highly-skilled trained observer	Observer as respondent	Observer as processor	Active participant
Landscape Properties	From principles of art, design, ecology, and resource management: Form, Balance, Contrast, Character Diversity, Ecological principles, Diversity, Silviculture, Timber stand improvement, Pollution control.	Specific landscape properties manipulatable through management and design: Cover, Water, Topography, Structures.	Associated with obtaining information and meaning: Mystery Prospect Legibility Refuge Identifiability Hazard	World of everyday experience: Familiarity, Social space, Landscape style.
Interaction Outcomes	Statement of landscape quality. Enhanced sense of landscape	Numerical or statistical expressions of perceived values. Related landscapes or landscape features		Habitual behaviour. Understanding of human and landscape development. Change Statements of landscape taste. Enhancement of sense-of-self.

Source: Zube *et al.* (1982)

Table 2.1 shows the relationship between the various paradigms for landscape perception research. It is indicated that, in landscape perception research, a number of statistical relationships are established and can be translated for data collection and analyses. Hence, the table above expresses that the paradigms such as expert, psychophysical, cognitive and experiential paradigms can be categorized based on the three-element model of landscape perception. These elements of landscape perception are human, landscape and outcomes. Outcomes are results from the interaction between humans and landscape.

As such, in the study reviewing literature on landscape perception, Zube *et al.*, (1982) made analyses based on six disciplinary categories, amongst which was recreation. Journals on recreation characterized a specialized orientation within resource management. It was revealed that, of all the literature reviewed based on recreation, 72% of the articles were grouped as the psychophysical paradigm, 17% as cognitive paradigm, and just a single article in each of the experiential and expert paradigms. As a reflection of what was discovered as a result of the literature review based on recreation, the psychophysical relationships between landscape and humans are of principal significance to recreation managers.

It was noted that in the relationship between the psychophysical paradigm and the three-element model of landscape perception require observers as respondents for data collection. These observers are the human element of the landscape perception model and thus the landscape element involves specific landscape properties that are manipulatable via design and management. These include, Topography, ground cover,

water and structures. Consequently, the characterization of these landscape properties is categorized and qualified based the observer's point of view.

In conclusion, the human perception of landscape is influenced by a multiple of factors, such as age, gender, ethnicity, lifestyle, length of stay in an area, physical, cultural, social environments. Therefore, in order to recognize human perception of landscape, studies have been done on four research paradigms regarding landscape perception. These paradigms include the expert, psychophysical, cognitive, and experiential paradigms. For recreational experience specifically, it was discovered to best study landscape perception based on the psychophysical paradigm, this paradigm gives an explanation to the thought that landscape properties and features have an effect on people's evaluation, perception and behaviour after interaction. Hence, when related with the model of landscape perception, the psychophysical paradigm established the human element by grouping respondents as the observers of landscape features. The landscape elements were therefore recognized as those landscape features that are manipulatable via design and management. Hereafter, the outcomes resulted by the interaction between landscape and humans are the numerical or statistical representations of perceived landscape features or related values of landscape. Once the representation of the outcomes is established, it can be convenient for landscape perception to be categorized based on the basic modes of perception.

Thus, it is noteworthy to recognized that landscape properties and features have an effect on people's perception. The relationship between the psychophysical paradigm and the model of landscape perception establishes that people are intrinsically connected with the landscape features that are manipulatable by design and

management. As such, it is therefore note-worthy to explore the management of recreational experience in view of human interaction with landscape features.

2.6 Managing Recreation Experience

Borrie *et al.* (1998) explained that in practice, managing recreation experience is difficult because experiences are constructed in a complex interaction between people and their internal state together with the activities they are involved in, and also with the environment in which they find themselves. Since recreation experiences have been recognized to be complex, recreation researchers and managers thus have a goal-directed approach in which recreational activities and settings are considered substitutable (Pietila and Kangas, 2015). That is to say that the activities in recreational parks depend on the settings of landscape features.

According to McCool (2006), setting are places that contain natural features or features from people's cultural heritage, desired by visitors who are subject to biophysical impact like erosion which can be managed for visitors' experience. Other researchers like Backlund and Stewart (2012), McCool (2006), Newsome *et al.* (2012) and Pierskalla *et al.* (2004) emphasised that recreation managers are presumed to have the ability to influence the experimental outcome by shaping the physical, social and managerial attributes of a setting to provide opportunities for satisfying experiences. Therefore, recreational settings are subject to design, manipulation and organization, in order to yield optimum user comfort for recreational park visitors. Thus, there are certain design standards to be considered regarding managing settings for recreational parks.

2.7 Design Considerations for Recreational Parks

As highlighted by Pierskalla *et al.* (2004), recreation managers are presumed to have the ability to influence the experimental outcome by shaping the physical, social and managerial attributes of a setting, providing opportunities for satisfying experiences. Thus, it is important to consider the standards of the physical attributes of recreational park settings. Therefore, Runte (1997), stated the basic facilities of a recreational park, that is, those features that are desirable by visitors and are subject biophysical effects, includes grassed area for field sports where by specific green areas are designated for field sport like football for both children and adults. Other facilities include plaved areas for court games like basketball and volleyball, swimming pool, recreational buildings, picnic facilities,space for adult passive recreation, parking areas and rest rooms. Arthur (1997) further explained, in the table below, the standard sizes for the types of recreational parks.

Table 2.2 Types of recreational parks and standard sizes

S/N	Type of Acre	Area/100 Population	Minimum size	Radius of Area Services (Km)
1	Play ground	1.5	4ares/2ares	0.75
2	Neighbourhood	2.0	10acres/5acres	0.75
3	Play field	1.5	15acres/10acres	2.0
4	Community Park	3.5	100acres/40acres	2.5
5	District parks	2.0	200acres/100acres	4.5
6	Regional parks	15.0	500-1000acres	15

Source: Arthur (1997)

Depending on the nature of space, Arthur (2018) explained in the table 2.2, that there are six basic types of parks. These are the playground, neighbourhood park, community park, district and regional parks of which have specific sizes and population size allocated to each park type. These recreational park type vary depending on their function and capacity.

Thus, haven considered the physical attributes of settings in recreational park design for a satisfying user experience; the social attribute, bearing in mind the experience of users, should be also be put into consideration. As such, a proper methodological approach should be employed in order to investigate the factors affecting recreational experience from a social view point. Thus, there are several approaches which have been studied based on the management of recreational park settings to optimize user experience.

2.8 Methodological Approach to Examine the Relationship Between Settings and Experiences

Various methodological approaches have been employed to study the connection between experience and setting. These approaches can be categorized into direct and indirect approaches. The direct approach allows respondents to document about their perception of numerous factors presumed to have an effect on their experience. While with indirect approach, secondary measurements serve as the foundation for statistical analyses that studies the relationship between setting and experience (Pietila and Kangas, 2015). It was also emphasized by Pietila and Kangas (2015) that direct approaches can be expressed in various kinds, such as, the Satisfaction approach, Normative approach, Experience sampling method (ESM) and Laddering Technique.

The Satisfaction approach relies on examining the general satisfaction of visitors by assessing how recreational park goers, often regarded here as visitors, are satisfied with multiple setting factors. According to Newsome *et al.* (2012), the most regularly used direct approach in recreation research is the satisfaction approach. Normative approach is where the respondents evaluate the extent, considering various hypothetical setting attributes, to which these settings add or detract from having an optimum recreational experience (Cole and Hall, 2009). Experience based approach focuses on the nature of the experience itself. Experience Sampling Method (ESM), has been used to encapsulate the multiphasic nature of the experience by asking respondents to describe their experiences (Borrie and Birzell, 2001 and Cole and Williams, 2012).

Last to be considered in the direct approach is the Laddering technique. This technique is based on Means-end theory. It provides the framework for creating a means-end chain that describes the relationship between setting attributes and reactions from the recreationist or visitors. The laddering technique is implemented using semi-structured questions to identify the elements of the means-end chain (Gutman, 1982). The process usually begins by bringing out the key attributes for decision making followed by asking why a particular attribute is important also why the perceived consequence of the attributes is important. The aim of laddering technique is to discover the personal values of the respondents (Pietila and Kangas, 2015).

However, Pietila and Kangas (2015) highlighted that the indirect approach involves the use of statistical analyses to determine the relationship between recreational experiences and settings. In the study of the indirect approach, recreational experiences are first operationalised and measured using the Recreation Experience Preference (REP) scale

to realize the various recreation experience domain. These domains include physical rest or privacy (Driver, 1983). With the REP score, the respondents' preferences which are regarded as the Recreation Opportunity Spectrum (ROS), are used to represent the settings which are influenced by recreational activities. Thus ROS-based studies supposedly divide the recreational landscape into heterogeneous zones of recreation opportunities and test for REP scores across the zones (Pietila and Kangas, 2015).

Several approaches, in displaying the relationship between recreation experience and settings are applicable to numerous studies for the aim of achieving optimum user experience for recreational park goers or visitors. Hence, the concept of space and place would be considered in the light of deciphering the most suitable for the understanding people's perception of landscape in recreational park design.

2.9 The Concept of Space and Place

Both the direct and indirect approaches mentioned earlier have their short-comings in capturing the relationship between setting and experience (Pietila and Kangas, 2015). It was thus highlighted that the indirect approach may consider spatial aspects, but not in ways that have yielded conclusions. The direct approaches are believed to be defective because of the lack of integration of spatial magnitudes, as tourist's destinations like national recreational parks are internally a diverse 'space-time mosaics' (Saarinen, 2004). Hence, Pietila and Kangas (2015) employ that researchers should explore approaches that account for, in addition to the human factor, the spatial components of the setting-experience relationship.

In current times, the of linking social dimensions to the concept of space is becoming prominent. From conceptual thoughts in studies done by Manzo (2008), Cresswell (2004), Tuan (1974) and Williams (2008), a space is known to simply be a geographical area with just physical attributes have evolved to the term identified as 'place', which is recognized to be geographical areas containing people's meanings, value and experience. The concept of place functions as a link between social experiences and geographical areas and aids in understanding the diversity of meanings that people ascribe to land and resources they manage (Galliano and Loeffler, 1999). The use of place can aid in the development of managing strategies that are more reactive to the need and experience of people (Manzo, 2008).

Therefore, in assessing people's experience, one must consider the concept of place as a function of both geographical location and people's perception of the space. This can be done adopting the laddering approach with postulates that respondents, when asked about their opinion of landscape attributes in recreational park, would be allowed to share in an unstructured and expressive manner.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Methods

The research method adopted by this study is the mixed research method which comprises of both quantitative and qualitative research methods. Thus, the mixed method yields quantitative and qualitative data types. The sampling method used to investigate landscape perception is the Laddering technique, which as described by Gutman, (1982), is implemented by using semi-structured questions to identify the elements of a means-end chain. This sampling process begins by bringing out the key attributes for decision making, followed by asking why a particular attribute is important and also why the perceived consequence of the attributes is significant. The sampling technique adopted by this study is the probability sampling technique whereby the sample was selected at random from Minna, the study area.

3.2 Data Types and Source

3.2.1 Primary data

A survey, conducted via the administration of questionnaires to recreational park visitors was used to obtain primary data. Also, an observation schedule was used to collect primary data, this was done by examining the condition of the landscape features in the existing recreational park in Minna, Niger State. The instruments used in this research were tailored towards achieving the research objectives of this study. These objectives include evaluating the state of landscape features of recreational parks in Minna and to investigate people's landscape perception in the use of recreational parks in Minna, Niger State Nigeria.

Table 3.1: Highlight of primary data collection process

S/N	Research Objective/Data	Research Method	Research Instrument
1	Investigate people's landscape preference in the use of recreational parks in Minna, Niger State	Quantitative and Qualitative	Questionnaire
2	Evaluate the state of landscape elements of recreational parks in Minna, Niger State, including examining the physical condition of the landscape elements in the recreational parks	Quantitative and Qualitative	Observation Schedule
3	Determine people's perception of landscape that can be integrated in the design of recreational park in Minna, Niger State, Nigeria.	Qualitative	Observation Schedule

Source: Author's Research Work (2020)

3.2.3 Secondary data

Relevant literature was reviewed and analysed in order to obtain variables and parameters to be measured by research instrument. Journals, articles, books, academic papers, and conference papers were used to retrieve these variables and parameters. The secondary data collected were useful and insightful for the purpose of this study.

3.3 Data Collection Instruments

Research instruments are considered necessary to collect relevant data for research purposes. Thus, the research instruments used in this study were questionnaire and observation schedule. Questionnaire, one of the research instruments, was open ended and was developed in an unstructured manner allowing respondents to answer questions and express themselves beyond the options provided. The observation schedule was

developed based on the parameters and variables gotten from relevant literature which was used on the case study, Murtala Park. Thus, the research instruments can be found in Appendix A, B and C.

3.4 Data Collection Procedure

Both the primary and secondary data were generated via the research instruments and reviewed literature. The primary data was gotten through the researcher's field work and a total of 500 questionnaires were distributed and 352 responses were obtained for data analyses. Copies of the questionnaire were distributed to residents of Minna, Niger State. An observation schedule was employed to obtain data by checking the condition and the presence of landscape settings in the existing recreational park in Minna, Niger State.

3.5 Parameters and Variables Measured for Assessment

The variables and parameters used in this study were gotten from relevant literature which were reviewed and studied to retrieve vital and useful information for this study. These variables gotten from relevant literature were used in the observation schedule and the questionnaire. Thus, the observation schedule was used to check the conditions and assess the functionality of landscape features in the existing recreational park in Minna, Niger State. According to Zube *et al.*, (1982), these features are **s**pecific landscape properties manipulatable through management and design. These include ground cover, water, topography, and structures. Other variables measured in this study were gotten from works done by various researchers. As such, a study conducted by Herzog *et al.* (2000) to investigate the perception of Australian natural landscapes from the perspective American and Australian respondents. The findings of the study showed

that there were positive correlations based on landscape preference. Generally, this yielded six perceptual categories (vegetation, open smooth, open coarse, rivers, agrarian, and structures). Consequently, the variables mentioned earlier were used in the questionnaire to obtain the landscape preference of recreational park goers in Minna.

Also, parameters were measured for the objectives of this study, based on several literature that were reviewed. Thus, as highlighted by Matijosaitiene (2011), landscape perception is influenced by social groups factors like age, ethnicity, place of residence (urban or rural), gender and education (high or elementary school). These group factors were used in this study as parameters to measure the factors that influence landscape perception. Other parameters measured were the aspects of landscape character which were brought to light by Swanwick (2002). According to a study on landscape character, Swanwick (2002) explained that there were certain aspects of landscape character which includes natural elements, social or cultural elements, aesthetics and perception have an effect on what is described as landscape. As such, the features of landscape perception were further grouped into various components, such as memories, associations, and preferences. When literature was further reviewed to capture the essence of perception, it was discovered that there were two basic modes of perception by people. According to Schachtel (1959). the two basic perception modes are the autocentric and allocentric perception modes. Thus, these parameters were analysed to investigate people's perception of landscape in recreational park design.

3.6 Method for Data Analyses and Presentation

The data gotten from the distribution of questionnaires were thereby analysed using the SPSS statistical analytic tool. Correlation analyses were used in order to find similarities

between various variables and parameters adopted by this study. Also, frequencies were used as well to gain understanding on percentages and hierarchy-based data from variables and parameters. Pearson's chi-square test was also used to gain insight and to find statistical relationships between variables. This sheds light on potential areas of research that need to be investigated. Hence, from the analyses, results were highlighted and presented in tables, charts and graphs which were done using the Microsoft excel tool.

3.7 Summary of Research Method

The research method adopted by this study is mixed due to the fact that both quantitative and qualitative data were obtained based on the research instruments used. Both primary and secondary data were used for this study. Analyses were done using SPSS and Microsoft Excel as a tool. Results and inferences were presented in tables, graphs and charts.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Data Presentation, Analyses and Discussion

Below are representations of the data collected according to all parameters and variables measured in this study.

4.1.1 Reasons for recreational park visits

As highlighted by Swanwick (2002), landscape encompasses the relationship between people the place in which they dwell, amongst those places are recreational parks. As such, when asked the reason for recreational park visits in an open-ended question format, using the variables highed by Swanwick (2002), majority of the respondents noted that recreational parks are best to spend leisure times. This is shown in charts below.

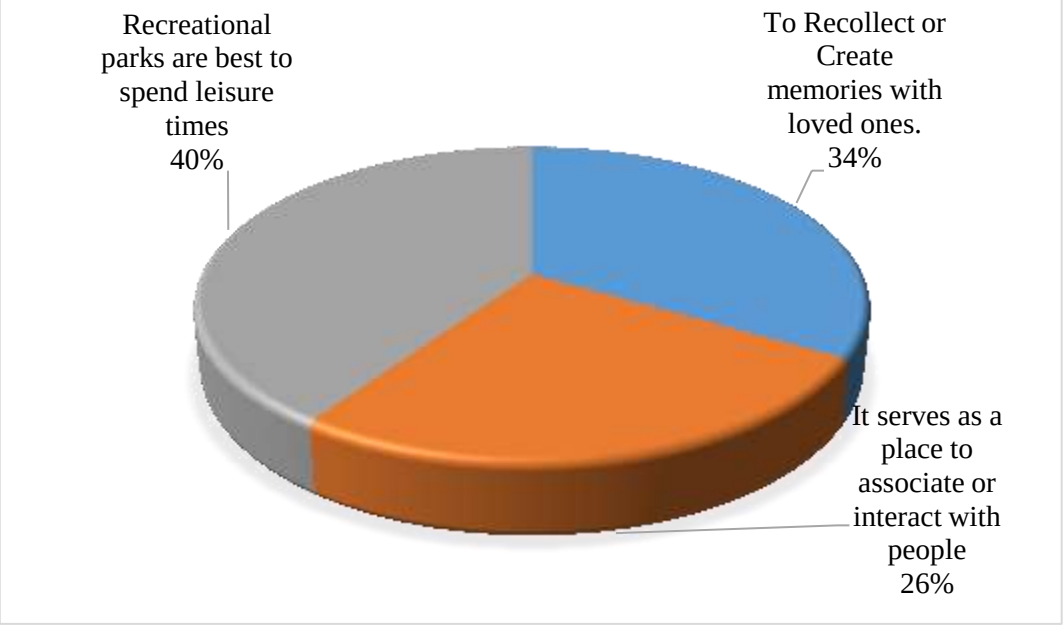

Figure 4.1: Percentage of responses based on reasons for recreational park visits.
Source: Author's Research work (2020)

Being an open-ended question, respondents were asked to state other reasons for park visits outside the options given. Other reasons as highlighted by respondents includes

the psychological satisfaction gained from socializing with people and experiencing nature. Some respondents also underlined that they visit recreational park because of the peace and tranquillity the interaction with nature gives to one's mind. This supports the view point by Van den Berg *et al.* (1998) which states that nature serves as a tranquilizer or stress-reliever of the chaos of the urbanized world This somewhat causes questions to be stimulated as to why there are less visits to recreational parks.

Since recreational parks were said by respondents to be the best place to spend leisure times, to create memories with loved ones and to be relieved of psychological stress, it would make sense to say that most people in Minna would visit recreational parks regularly, but that does not seem to be the case. As highlighted by AbdRazack *et al.* (2013), it was noted that majority of the people of Minna prefer to visit sport centres and only a few visit recreational parks. Thus, there's need to further study the behaviour of people with respect to preference for landscape features.

4.1.2 Preferences for landscape settings

According to a study done by Herzog *et al.* (2000), six perceptual categories of landscape features which include open smooth, open coarse, rivers, agrarian, and structures, were yielded as a result of investigating the Australian natural landscape perceptions of Austrians and American residents. Thus, the six perceptual categories were variables analysed as landscape settings for this study. Thus, based on these variables highlighted, respondents were asked about their preferences for various landscape settings in recreational parks. Besides the preference for structures to be found in recreational parks, respondents also preferred open smooth landscapes, which

was the second highest in percentile and the presences of water bodies which was the third highest in percentile.

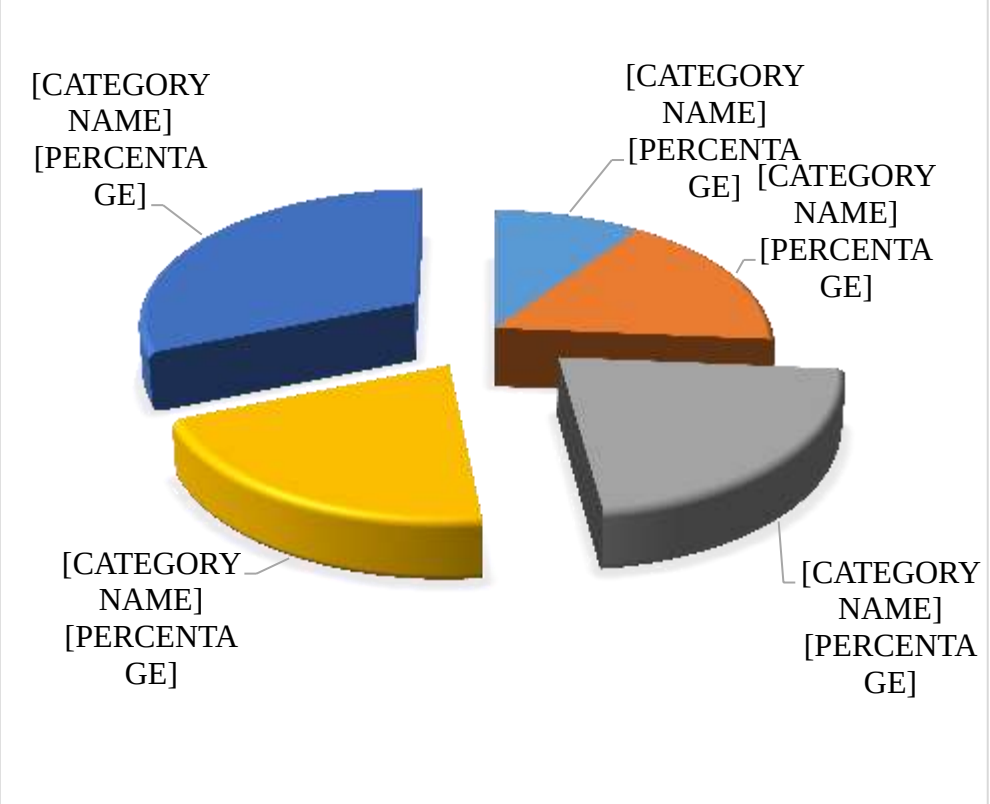

Figure 4.2: Percentage of landscape feature preferences
Source: Author's Research work (2020)

In the tropical region where the study area Minna in Niger State is found, World Data (2020) explained that Niger State is one of the warmest regions in Nigeria with an average temperature of 34 degree centigrade. With the high temperature condition of the Minna, it is appropriate that people would prefer any means that serve as a protection from the harsh weather condition, hence the selection of structures, open smooth landscape and the presence of waterbodies, to be found in recreational parks. An open smooth landscape comprising majorly of the green areas having grasses and trees, this gives the surrounding environment a cool effect. The open smooth landscape also creates an avenue where people met with nature. Also, the presence of water bodies

helps to reduce the temperature of surrounding environments, as such, Hathway and Sharples (2012) explained that the presence of water features plays an essential role in potential cooling, which is done via evaporation and thus, urban water bodies like rivers, ponds and lakes have a significant role in reducing heat in surrounding environments.

4.1.3 Landscape perceptual qualities as regards to aesthetics

Aesthetics is known to be one of the factors that influence people's perception of landscape as highlighted by Swanwick (2002). When asked about what adds beauty or aesthetics to a recreational park based on variables gotten from Figure 1.1, the table below shows the various ways aesthetics is expressed and the percentages based on the responses.

Table 4.1: Percentage of landscape elements that add to the aesthetics of recreational parks.

S/N	Variables	Percentile
1	The colour of the landscape elements	16.71
2	The form landscape elements create	16.61
3	The pattern of Landscape elements	18.16
4	The smell of landscape elements	10.18
5	The texture of landscape elements	19.5
6	The sound of landscape elements	18.82
Total		100.00

Source: Author's Research work (2020)

The responses with the highest percentages as regard what adds to the aesthetics of recreational parks are the textures of landscape elements, the sound of landscape elements and the patterns landscape elements create. As asserted by Schachtel (1959), autocentric perception is characterized to be of lower senses such as touch (texture) and smell and vision for landscape perceptual qualities; form and pattern. On the other hand allocentric perception is identified to be of higher senses like sight for the pereptual quality; colour and hearing for sound. While analysing the results of the percpetual qualities, it was discovered that for the autocentric perception mode, the perceptual quality with the highest percentage was texture for which the human sense reponsible is touch. While for the allocentric perception mode, it was observed that the perceptual qualities with the highest percentage was sound for which the human sense responsible is hearing.

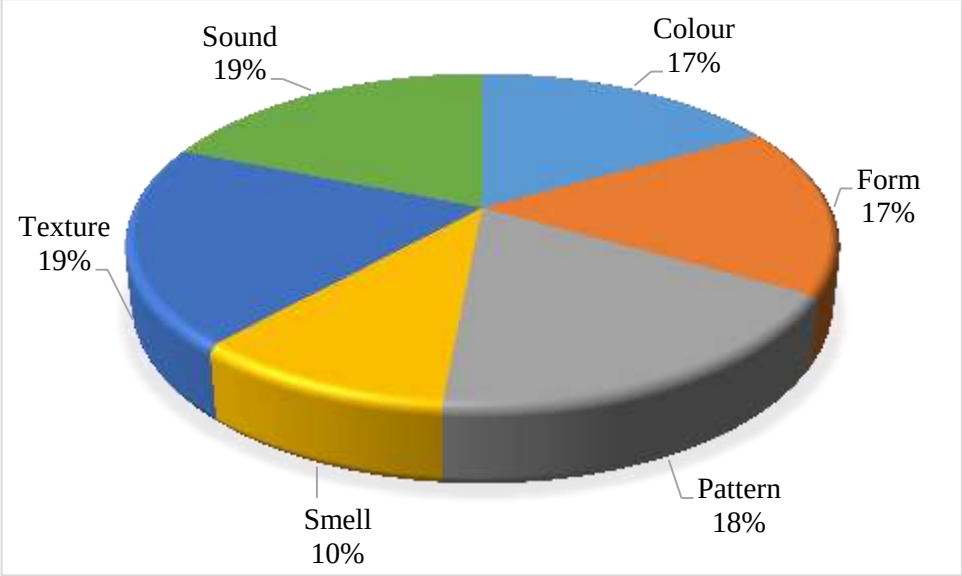

Figure 4.3: Percentile based on landscape perceptual qualities by respondents.
Source: Author's Research work (2020)

According to Necka (2011), nature is more likely to be perceived in the light of allocentric perception mode than the autocentric perception mode. Looking at the data

analysed, the variables with the highest percentages were texture and sound which are associated with both autocentric and allocentric perception modes. Thus, when examining the first three variables with the highest percentage, it was discovered that two of those variables are attributes of allocentric perception supporting the notion highlighted by Necka (2011). Although, the data seems to be in correlation with allocentric perception as regards the perception of landscape setting, there is still the need to further investigate the reason behind this and the influence of socio-cultural factors on the results. Hence, this is discussed in subsequent charts.

4.2 Analyses Based on Landscape Preference Settings and Social Group Factors

According to Herzog *et al.* (2000), one of the best ways to investigate immensely the interplay between nature and nurture in environmental psychology is to make cross cultural and subcultural assessments of landscape perception and preference. Thus, below are charts showing cross tabulations between socio-cultural group factors highlighted by Carmona *et al.,* (2003) and Matijosaitiene (2011) and also the correlations between variables. The socio-cultural factors used for analysis in this study includes; age, gender, ethnicity and the highest education obtained by respondents.

4.2.1 Cross tabulation between various ethnicities and landscape preferences for the male gender

First, the top three preferences for landscape settings were selected and cross tabulated with the ethnicities of respondents in order to examine the correlations between ethnicities and preferences for landscape settings. Thus, the chart below shows the result of this analysis.

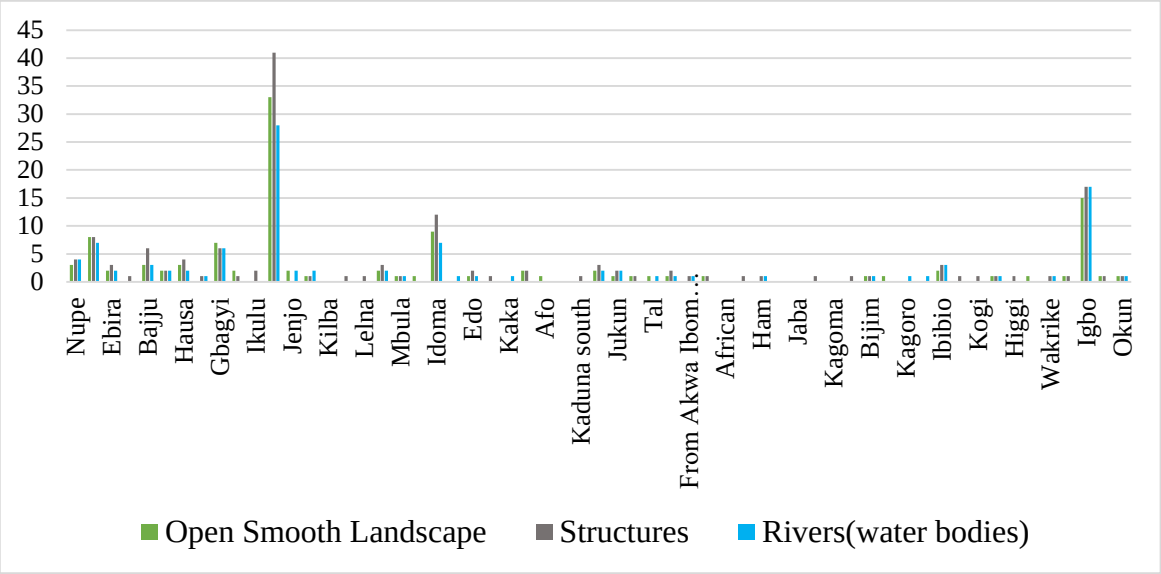

Figure 4.4: Preference for landscape settings across various ethnicities particular to the male gender
Source: Author's Research work (2020)

As emphasised by Muhammad (2012), the three major ethnicities in Minna, Niger State are Nupe, Gbagyi (Gwari) and Hausa, thus these three ethnicities where further accentuated to determine the similarities between ethnicity and the preference for the landscape settings, particularly for the male gender. From the data collected, it also was noted that two other ethnicities had a high number of responses and thus were also selected for further analysis. Below shows the relationship between the selected ethnicities and landscape settings preferences for the male gender.

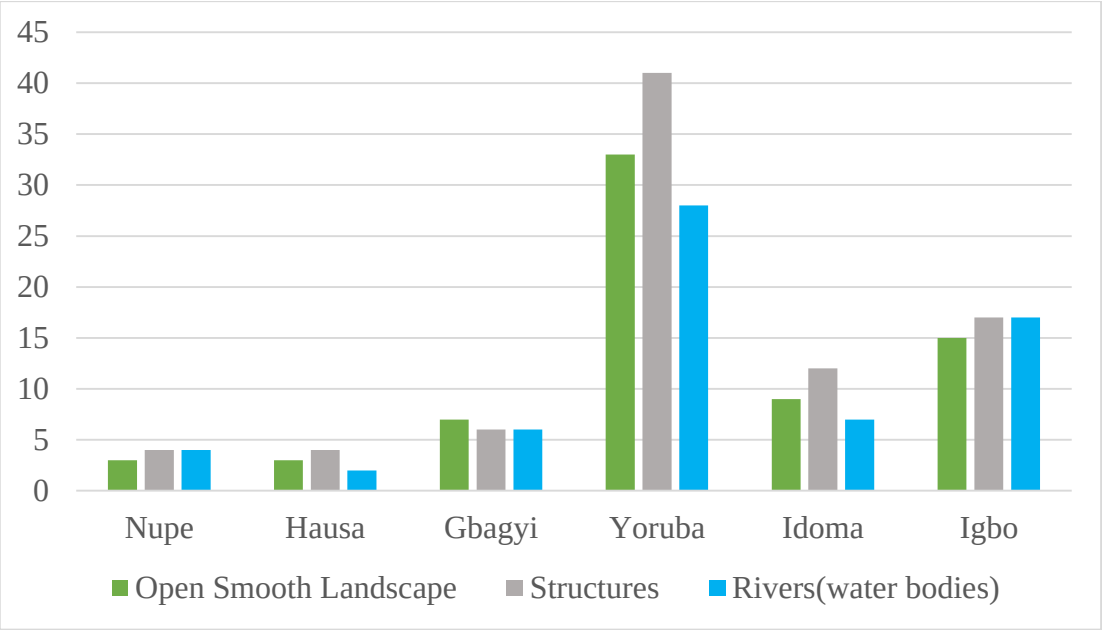

Figure 4.5: Preference for landscape settings across selected ethnicities particular to the male gender
Source: Author's Research work (2020)

The result shown in Figure 4.5 supports the view by Priego *et al.* (2008) which states that people of different social and cultural backgrounds use and perceive urban landscape in different ways. As such, it was noted that though the number of respondents from the major ethnicities found in Minna were of a small amount, there were still variations in preferences that tell of the character of those ethnicities. Hence, from Figure 4.5 it was observed that the preference for structures had a highest frequencies for both the Nupe and Hausa tribe when compared to the of presence open smooth landscape and water bodies. It was noted that though all three ethnicities prefer the presence of structures in recreational parks, the Gbagyi tribe prefer the open smooth landscape more than the presence water bodies and structures. Considering the other ethnicities selected, a resemblance is found between the Yoruba and the Idoma tribe for all three landscape settings considered. This could suggest a similarity in the way of life between the Idoma and the Yoruba tribe. While there is a likeness between those the

Idoma and Yoruba tribes, the preference pattern is different for the Igbo tribe, where the preference for the presence of water bodies and structures supersedes the presence of open smooth landscape.

4.2.2 Cross tabulation between various ethnicities and landscape preferences for the female gender

To further study the preference for landscape settings, the data of landscape preferences were cross-tabulated with various ethnicity also for the female gender. Thus Figure 4.6 represents the results gotten from the analysis.

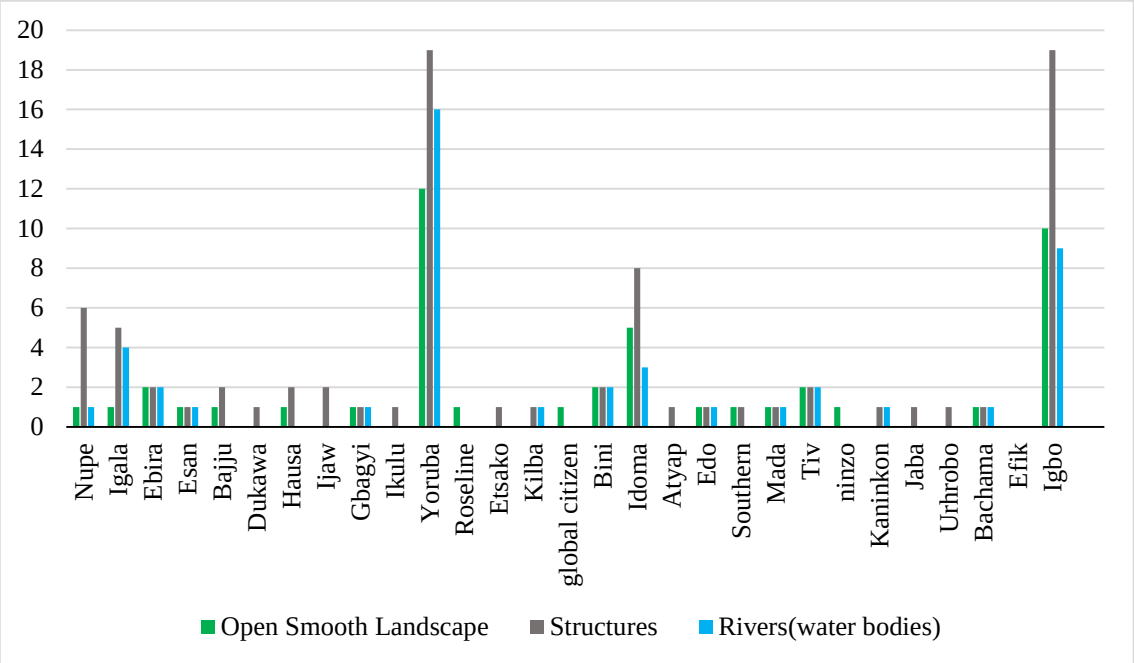

Figure 4.6: Preference for landscape settings across various ethnicities particular to the female gender
Source: Author's Research work (2020)

Figure 4.6 shows the distribution of preferences for landscape settings for the female gender across various ethnicities. These landscape settings include the presence the open smooth landscape, structures and waterbodies. From Figure 4.2, it was discovered that majority of the respondents prefer the presence of structures to be found in

recreational parks more than the other landscape settings. This is also demonstrated in Figure 4.6 showing majority of the ethnicities for the female gender preferring the presence of structures when compared with other landscape settings. Accentuating the major ethnicity found in Minna, the Nupe, Gbagyi and the Hausa ethnicities, including the Idoma, Yoruba and Igbo ethnicities, and to further examine the character and relationship between these ethnicities and landscape setting preferences, below is a graph that points out key attributes.

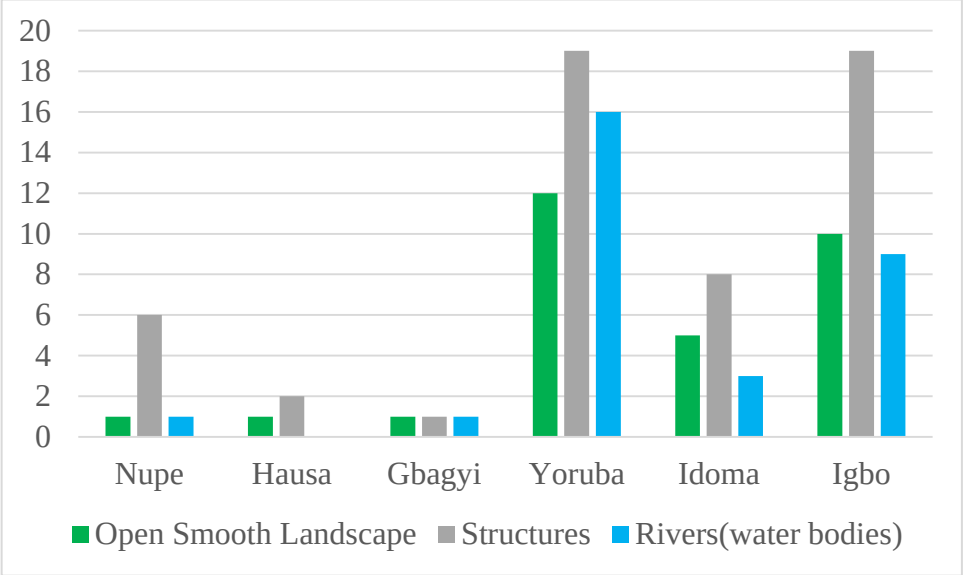

Figure 4.7: Preference for landscape settings across selected ethnicities particular to the female gender
Source: Author's Research work (2020)

When compared to the male gender, an obvious difference is seen in the preference for landscape settings for the female gender. Considering the Nupe tribe, a clear distinction was observed between the preference for structures and the other landscape settings. On the other hand, the preference for open smooth landscapes and waterbodies were similar for both the Hausa and Gbagyi tribe. From Figure 4.7, it was also seen that both the Idoma and Igbo tribe prefer the presence of structures and open smooth landscape more than the presence of waterbodies in recreational parks. Although the preference for

structures is seen more for the Igbo tribe. It was also observed that the Yoruba tribe, in addition to preferring the presence of structures, desire waterbodies also to be found in recreational parks more than the open coarse landscape setting. Zube *et al.* (1982) explained that the outcome of the interaction between humans and landscape settings are percieved values represented as numerical expressions.

Therefore to further examine the relationship between gender and ethnicity for the preference of landscape settings, a Pearson's Chi Square test was done. According to Statistics solutions (2020), the Chi Square test is usually employed when testing the relationship between various categorical variables. As such, categorical variables are described by 'Variable Types' (2020), to be variables that have two or more categories in such a way that are intrinsic, like the gender variable which has two categories, the male and female gender. Categorical variables are sometimes known as nominal variables. Thus, according to Statistic solutions (2020), the Chi Square statistic is expressed numerically as

$$x^2 = \sum((O - E)^2/E)$$

i. Where, x^2 represents the *p*-value of the chi square statistics.
ii. O represents the observed frequency (the number of counts).
iii. E represents the Expected frequency if no relationship existed between the variables.

Thus, the table below shows the relationship between the preferences for landscape settings and gender as regards ethnicities. This relationship is expressed as the *p*-value of various landscape settings and was analysed using the SPSS statistical analysis tool.

Table 4.2: Statistical relationship between preference for landscape settings and gender as regards ethnicities

Ethnicity	*P*-value for water bodies	*P*-value for structures	*P*-value for Open Smooth Landscape
Nupe	0.162	0.186	0.241
Gbagyi	0.428	0.428	0.521
Hausa	0.29	0.495	0.809
Yoruba	0.562	0.881	0.193
Idoma	0.384	0.895	0.581
Igbo	0.214	0.127	0.602

Source: Author's Research work (2020)

According to Statistics Solution (2020), if a *p*-value results in any number less than 0.05, it can be concluded that the variables analysed are dependent variables. This means that a statistcial relationship exist between the two variables. As such, table 4.2, shows the relationship between gender and landscape-setting preferences for selected ethnicities. Hence table 4.2 shows that no statistical relationship exist between gender and the preferences for the landscape settings; structures, open smooth landscape and waterbodies for the selected ethnicites.

4.2.3 Cross tabulation between age distribution and preferences of landscape settings as regards gender

According to Carmona *et al.*, (2003), the differences in environmental perception depend on factors such as age, gender, ethnicity, lifestyle, length of stay in an area,

physical, cultural and social environments. Consequently, the age and gender of respondents were cross tabulated to further investigate the factors affecting the preferences of various landscape settings. Below shows the result of the analysis.

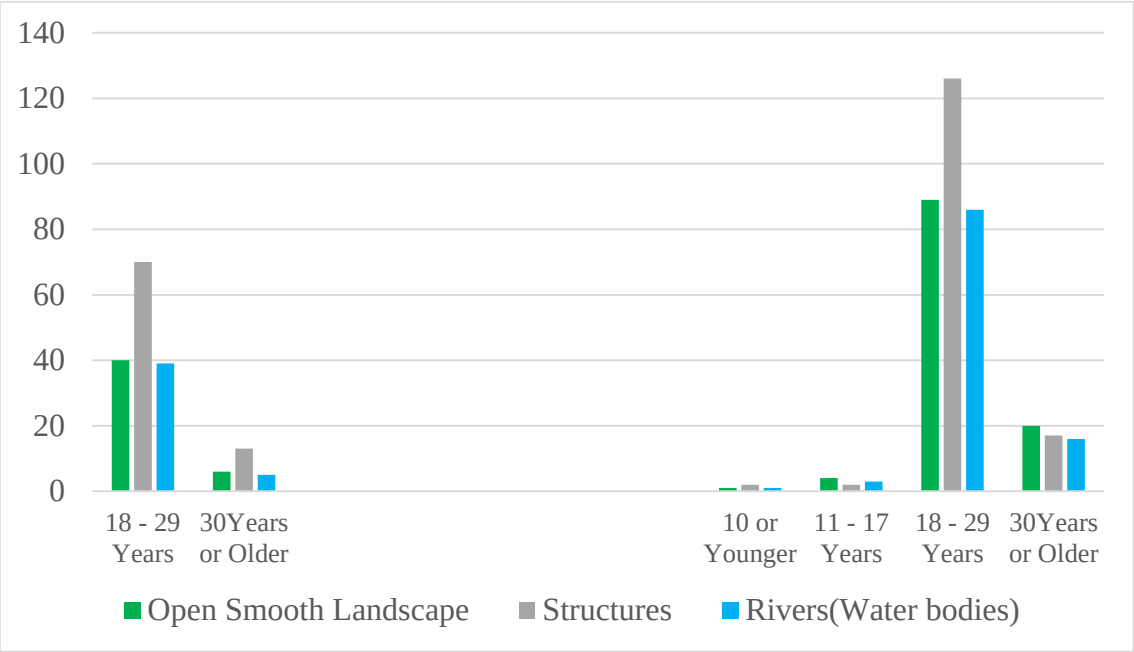

Figure 4.8: Preference for landscape settings across age distribution for the female and male gender
Source: Author's Research work (2020)

Figure 4.8 shows the result of the cross tabulation between age distributions and the preferences for landscape settings for both the female and Male gender. To compare the data for both genders, the results gotten are placed side by side in Figure 4.8. The age distribution on the left is for the female gender, while the age distribution on the right is for the male gender. It can be noted that there are variations in the preference for landscape settings for both genders. Though it is seen in Figure 4.2 that the preference for structures had the highest selection, visualizing the data based on age distribution, it is realized that this is not seen across all ages. Male respondents within the age range of 30 years or older prefer the presence of open smooth landscape more than structures or

waterbodies while the female respondents of the same age range prefer the presence of structures more than open smooth landscape and waterbodies. The preference of open smooth to be found in recreational parks by the male gender of ages 30 or older could be as a result of the satisfaction gotten from the interaction with natural landscape. Thus this choice could mean an escape from the urban world by the male gender, as natural landscapes serve as a anti-stress mechanism. This phenomenon is seen in the study done by Schroeder (1991) which emphasises that natural environments with green spaces and water prompt tranquil and relaxed states compared with urban environments without any form of soft landscape.

According to World Bank (2015), men are more likely to be active in formal occupations in the urban world than women, thus supporting the claim that the male gender beyond the age of 30 are more likely to spend most times in man-made structures. This would imply the need and preference for natural landscapes as an escape from the urban environment by the male gender between the ages of 30 years or older. Thus, below shows an analysis to further examine the relationship between age distributions and the preference for landscape settings for both genders.

Table 4.3: Statistical relationship between preference for landscape settings and gender as regards age distribution

Age Distribution	*P*-value for Open Smooth Landscape	*P*-value for structures	*P*-value for water bodies
10-17 Years	0.576	0.361	0.171
18-29 years	0.27	0.437	0.517
30 or older	0.508	0.002	0.774

Source: Author's Research work (2020)

Table 4.3 shows the statistical relationship between landscape settings and genders across the various age distristributions, as such it can be seen that the co-dependence of variables vary with the age distributions. For all other age distributions other than 30 or older, the *p*-value yeilded figures greater than 0.05. This explain that there is the preferences for landscape settings; structures, open smooth landscape and water bodies is not dependent on gender across all ages younger than 30 years. Thus, the age distribution of 30 years or older shows a statistical relationship between the prference for structures and gender as the *p*-value yeilded a value of 0.002 which is less than 0.05. Thus this sheds light to the finding made in Figure 4.8 where it is seen that the male gender, as opposed to the female gender, do not prefer structures as part of landscape settings in recreational parks. This is reinforced by the assertion made by World Bank (2015), which emphasizes that the male gender spent more time in the urban world than the female gender. Hence, no statistical relationship is seen between gender and the preference for open smooth landscape and water bodies for ages 30 or older.

4.2.4 Cross tabulation between education acquired and landscape setting preferences as regards gender

A cross tabulation analysis was done to examine the relationship between the highest education obtained by respondents and the gender of the respondents. Thus, below show the result of the analysis represented in graphs. On the left are results for the female gender, while on the right are results for the male gender.

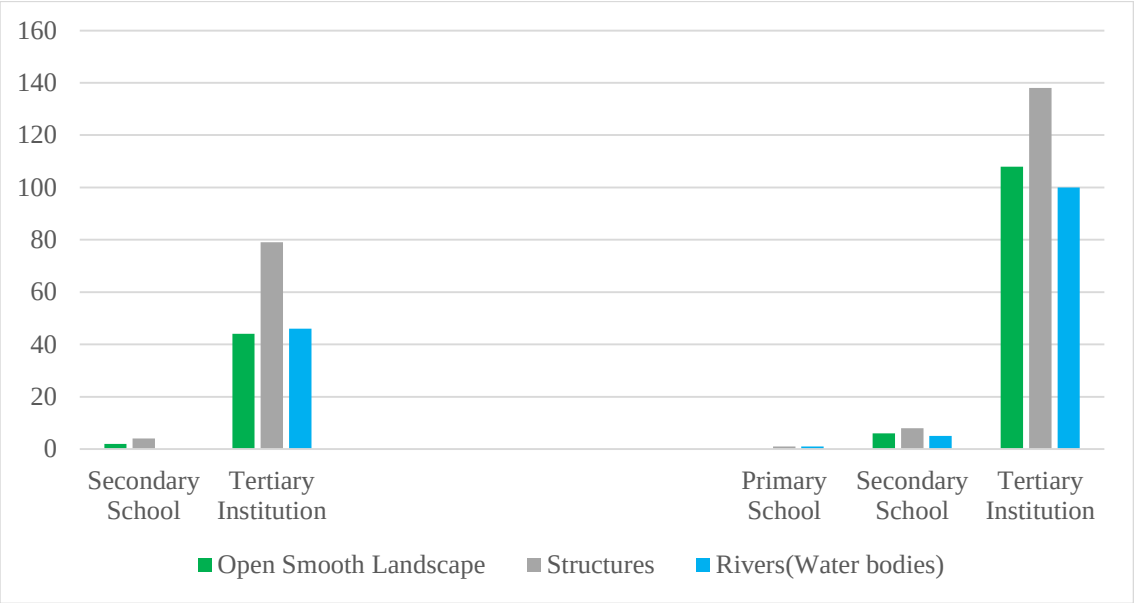

Figure 4.9: Preference for landscape settings according to education acquired for the female and male gender
Source: Author's Research work (2020)

From Figure 4.9, it is observed that for both genders, majority of the respondents had acquired either secondary education or tertiary education. In Figure 4.9, on the left is the result for the female gender while on the right is for the male gender. As such, though the preference for structure as a landscape setting had the highest frequency for both genders, a slight variance is observed to exist in the preference of open smooth landscape and waterbodies as landscape settings in recreational parks. The result is shown in Figure 4.9 having tertiary education with highest frequency, it is observed that the female gender prefer the presence of waterbodies as compared to open smooth landscape. While for the male gender the opposite is obeserved with the preference for open smooth landscape more than the presence of water bodies. Hence to further a correlation analysis is done to examine the relationship between the highest education aquired and the gender of respondents.

Table 4.4: Statistical relationship between preference for landscape settings and highest education obtained as regards gender

Gender	*P*-value for Open Smooth Landscape	*P*-value for structures	*P*-value for water bodies
Female	0.771	0.84	0.044
Male	0.62	0.705	0.529

Source: Author's Research work (2020)

From table 4.4, holistically considering all education level obtained by respondents, it is observed that for the female gender, a statistical relationship exists between education attained and the preference for water bodies as a landscape settings in recreational parks. The *p*-value yeilded a value of 0.044 expressing that the preference for water bodies to be present in recreational parks is dependent on the education obtain by the female gender. Thus for the male gender, no statistcal relationship is observed to exist between between education attained and the preferences for landscape settings.

Therefore the results gotten from the analysis regarding the preferences for landscape settings across the multiple socio-cultural group factors shows that there are statistical relationships existing between these factors and the preferences for landscape settings. As such, the preferences for landscape settings highlighted by Herzog *et al.* (2000) are dependent on some social-cultural group factors highlighted by Carmona *et al.*, (2003).

4.3 Analysis Based on Landscape Perceptual Qualities and Social Group Factors

According to Schachtel (1959), there are two basic perception modes which are the autocentric and allocentric perception modes. Various senses with which humans

perceive were categorized according to the two perception modes. Thus, these senses for landscape perception highlighted by Swanwick (2002) in Figure 2.1 were considered as variables to be analysed in this study. These senses which include touch, sight, vision, smell and hearing. Below shows various cross tabulations between the landscape perceptual qualities and social group factors brough to light by Matijosaitiene (2011).

4.3.1 Cross tabulation between various ethnicities and landscape perceptual qualities for the female gender

The ethnicities of respondents were cross tabulated with the landscape perceptual qualities highlighted by Swanwick (2002); therefore, the Figure 4.10 shows the result of the analysis specifically for the female gender, represented in the chart below.

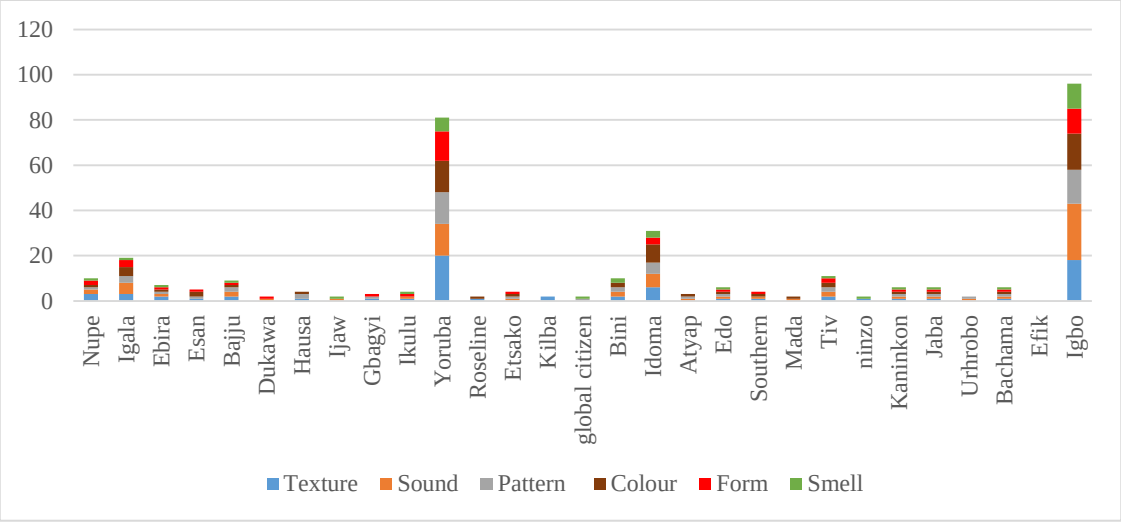

Figure 4.10: Landscape perceptual qualities across various ethnicities particular to the female gender
Source: Author's Research work (2020)

The indigenous ethnicities in Minna, Niger State, are the Nupe, Gbagyi and Hausa tribe as highlighted by Muhammad (2012). Thus, these ethnicities were emphasised for further analysis along with the Idoma, Yoruba and Igbo tribe. The Idoma, Igbo and Yoruba ethnicities were selected on the basis of high number of responses. As such,

below shows an accentuation of the cross tabulation between selected ethnicities and landscape perceptual qualities for the female gender.

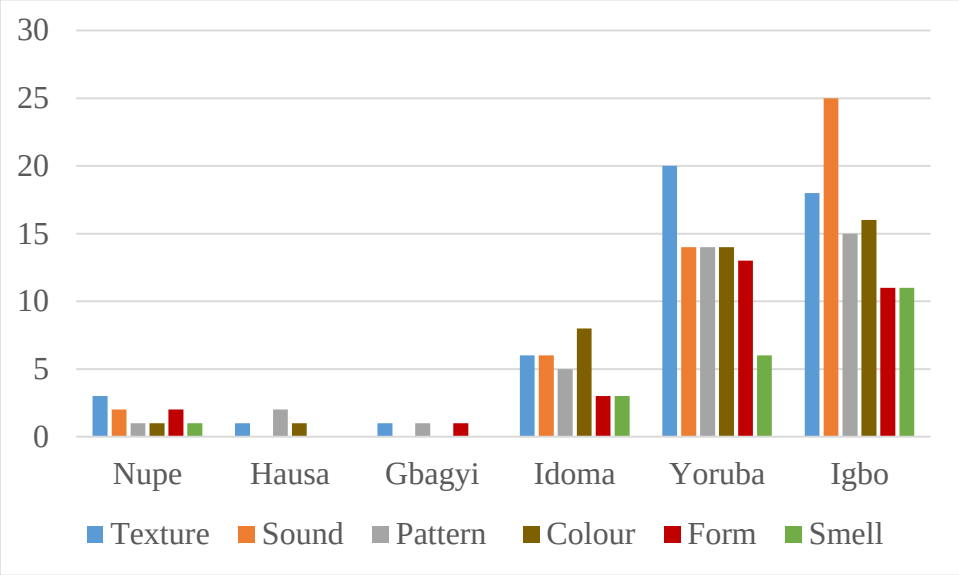

Figure 4.11: Landscape perceptual qualities across selected ethnicities particular to the female gender
Source: Author's Research work (2020)

According to Swanwick (2002), the various perceptual qualities for landscape perception are texture, form, pattern, smell, colour and sound. These perceptual qualities thereby analyzed in this study can be percieved by the various human senses and are categorized either as the autocentric perception mode or the allocentric perception mode as highlighted by Schachtel (1959). From Figure 4.11, it was noted that landscape perceptual qualities were viewed differently for each ethnicity. Thus, in order to determine the dominant perception mode of each ethnicity, the first three perceptual qualities with the highest frequencies were selected and weighed according to the senses associated with the perception modes. According to Van den Berg (2016), frequencies are used to summarize variables that are categorical in nature. Hence, the

percepion mode for each enthnicity was thereby categorized as the one having most perceptual qualities out of the three selected with the highest frequencies.

Considering the Nupe tribe, the perceptual qualities with the highest frequencies are texture, form and sound. Thus accroding to Porteous (1996), the human senses responsible for texture, form and sound are touch, vision and hearing respectively. Thus, the predominant perception mode adopted by the Nupe tribe for the female gender is autocentric perception.

The Hausa tribe on the other hand had pattern as the landscape perception quality with the highest frequency. Colour and texture had the second and third highest frequencies because the other landscape perceptual qualities were not selected by the hausa tribe. Hence, for the female gender, the predominant perception mode adopted by the Hausa tribe is the Autocentric perception mode. Observing the result of the Gbagyi tribe, it was noted that texture, form and pattern were the landscape perceptual qualities with the highest frequencies thus, the Gbagyi tribe percieve landscape qualites through autocentricity. Other ethnicities considered were the Idoma, Yoruba and Igbo tribe. For the female gender of the Igbo tribe, the three perception qualities with the highest frequency were sound, texture and colour. The senses responsible for sound, texture and colour are hearing, touch and sight respectively, and the perception mode predominant by the female gender of the Igbo tibe is the allocentric perception mode. Considering the Yoruba tribe, the female gender it was discovered that texture, sound, pattern and colour had the highest frequencies. Thus, the senses responsible for the landscape perceptual qualities mentioned above are touch, hearing, vision and sight respectively. This consequently put both autocentricity and allocentricites on an equal plane in that

regard. Lastly, the Idoma tribe had colour, texture and sound having the highest frequencies as regards landscape perceptual qualities. Thus, for the female gender of the idoma tribe, the perception mode adopted is Allocentric perception mode.

4.3.2 Cross tabulation between various ethnicities and landscape perceptual qualities for the male gender

For the male gender, the ethnicities of respondents were cross tabulated with various landscape perceptual qualities. Below shows the result of the analysis.

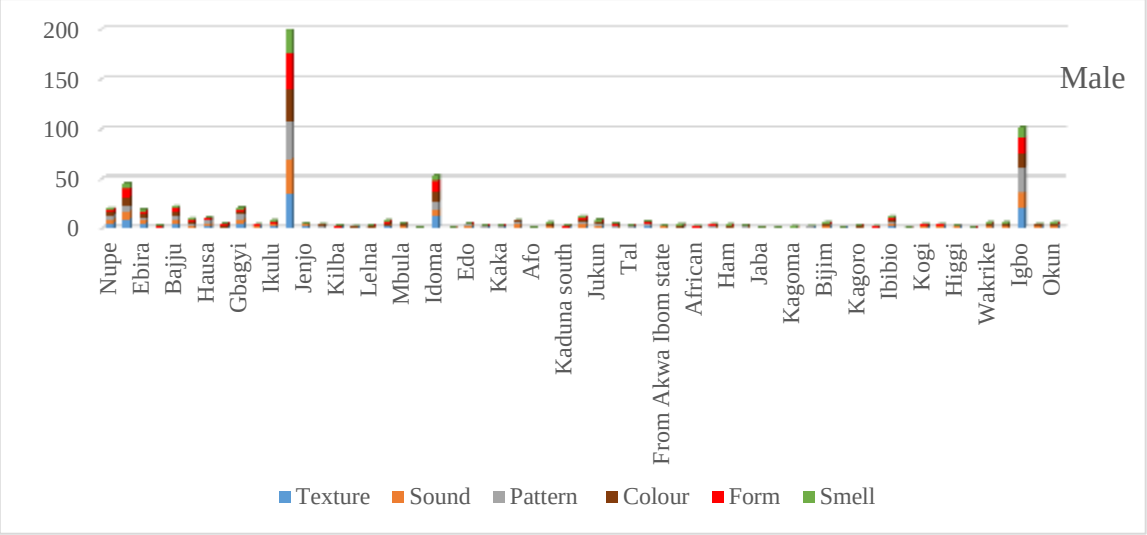

Figure 4.12: Landscape perceptual qualities across various ethnicities particular to the male gender
Source: Author's Research work (2020)

According to Muhammad (2012), the three major ethnicities in Minna, Niger State are the Nupe, Hausa and Gbagyi tribes. Thus, these tribes were selected along with the Yoruba, Igbo and Idoma tribe for further analysis based on the high frequency yielded as a result of the cross tabulation. Below shows an accentuation of the result gotten from the cross tabulation between landscape perceptual qualities and selected ethnicities for the male gender.

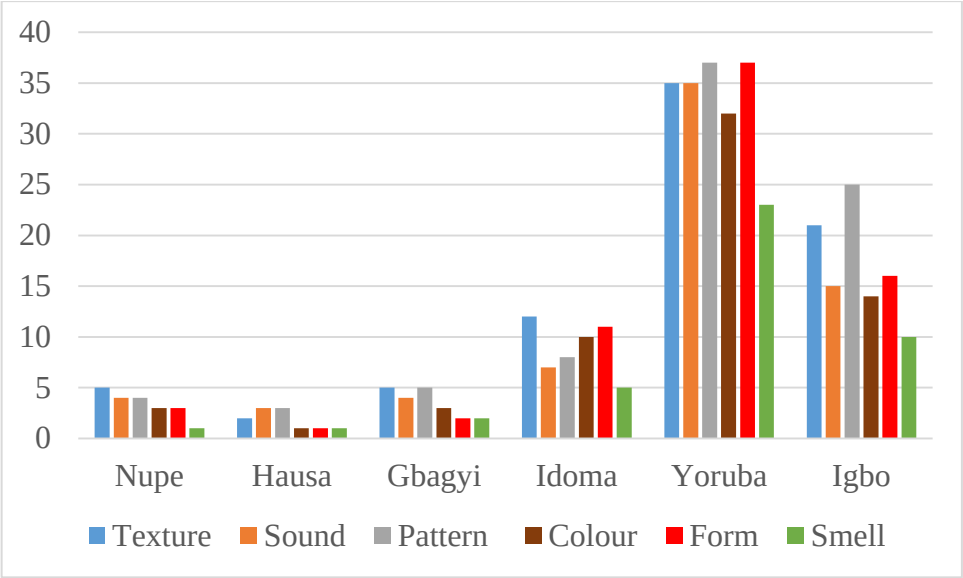

Figure 4.13: Landscape perceptual qualities across selected ethnicities particular to the male gender
Source: Author's Research work (2020)

From Figure 4.13, it can be noted that the Nupe tribe and Hausa tribe had the same set of landscape perceptual qualities with the highest frequencies but with varying values. The landscape perceptual qualites with the highest frequencies were texture, sound and pattern, thus the human sesnse responsible for those perceptual qualities are touch, hearing and vision. Consequently, it is realized that both the Nupe and Hausa ethnicites adopt the autocentric perception mode. The Gbagyi tribe on the other had texture, pattern and sound perceptual modes with the highest frquencies.

This result shows that the Gbayi tribe adopt the autocentric perception mode. Considering the Igbo tribe, it was realized that the landscape perceptual qualities with the highest frequencies were pattern, texture and form. The senses responsible for those perceptual qualities are vision and touch respectively, showing that the autocentric perception mode is adopted by the male gender of the Igbo tribe. In view of the Yoruba tribe, it was seen that the perceptual qualities with the highest frequencies were pattern,

touch, form, sound and texture, thus the human senses responsible for those perceptual qualities are vision, hearing and touch respective. It can thereby be noted that the predominant perception mode for the male gender of the Yoruba tribe is the autocentric perception mode. Lastly, considering the Idoma tribe, it was realized that the perceptual qualities with the highest frequencies were texture, form and colour with the human senses responsible as touch, vision and sight respectively. Consequently, the predominat perception mode for the male gender of the Idoma tribe is the autocentric perception mode.

According to Zube *et al.* (1982), the outcome as a result of human interaction with natural landscapes is representaed as satistical or numerical expressions. Therefore, considering all five ethnicities selected, a pearson chi-square test was done to examine the statistical relationship between the landscape perceptual qualities and gender for the selected ethnicities. Below shows the result of the analysis.

Table 4.5: Statistical relationship between landscape perceptual qualities and gender as regards selected ethnicities

Ethnicities	*P*-value for Form	*P*-value for Sound	*P*-value for Pattern	*P*-value for Smell	*P*-value for Texture	*P*-value for Colour
Nupe	0.558	0.248	0.079	1	0.221	0.221
Hausa	0.495	0.147	0.29	0.495	0.809	0.427
Gbagyi	0.087	0.428	0.338	0.621	0.338	0.521
Yoruba	0.146	0.384	0.429	0.1	0.363	0.658
Idoma	0.034	0.581	0.816	0.824	0.268	0.58
Igbo	0.818	0.315	0.315	0.624	0.658	0.176

Source: Author's Research work (2020)

Table 4.5 shows the statistical relationship between gender and the landscape perceptual qualities for various ethnicities. As asserted by Statistics Solution (2020), if a *p*-value results in any number less than 0.05, it can be concluded that the variables analysed are dependent variables. It is observed that for the Idoma tribe, the *p*-value yeilded a value of 0.034, showing that a statistical relationship exists between gender and Form as a perceptual quality. As such, it can be noted that the perception of form is dependent on gender for the Idoma tribe. Thus besides the Idoma ethnicity, no other statistical relationship is observed to exist between the landscape perceptual qualities and gender as regards the selected ethnicities.

4.3.3 Cross tabulation between age distribution and landscape perceptual qualities as regards gender

A cross-tabulation analysis was done to investigate the relationship between the various age distributions and the landscape perceptual qualities. Thus, for both genders, the landscape qualities; form, texture, sound, smell, pattern and colour were cross tabulated

with age distributions for analysis. The result of the cross-tabulation analysis is represented in the chart below.

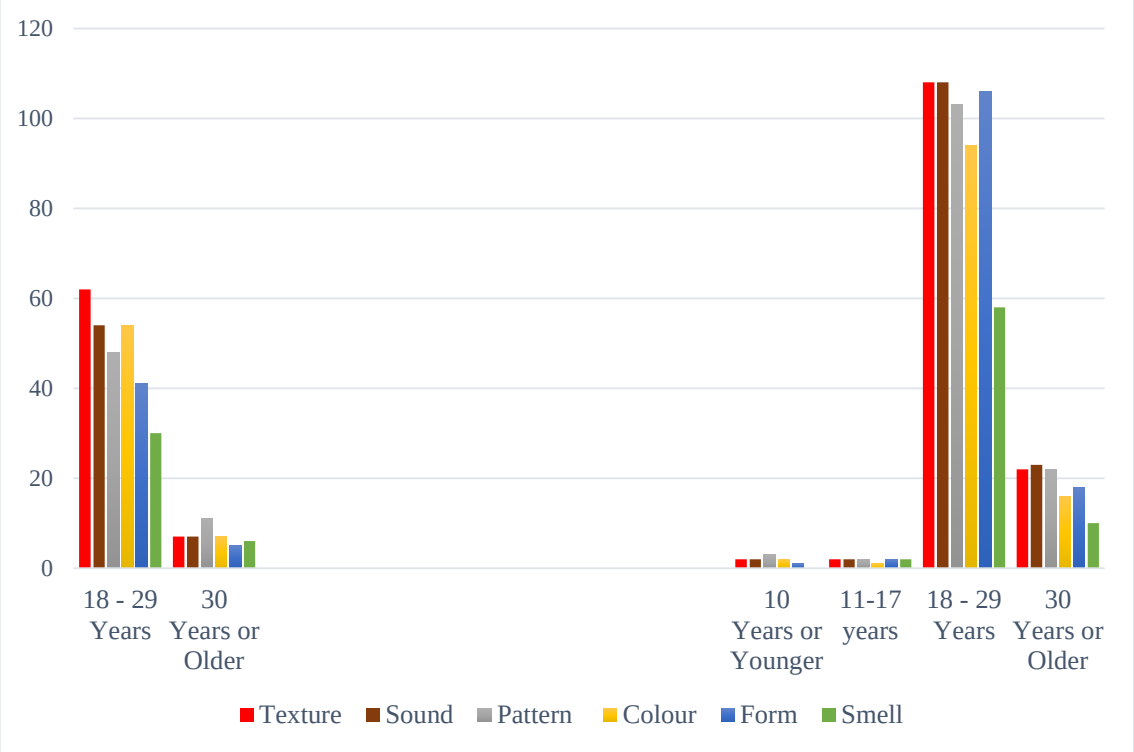

Figure 4.14: Landscape perceptual qualities across age distributions for the male and female genders
Source: Author's Research work (2020)

Figure 4.14 shows the result of the cross tabulation between the various age distributions and landscape perceptual qualities for both genders. On the left is age distibution for the female gender, while on the right is the age distribution for the male gender. As higlighted by Swanwick (2002), the various perceptual qualities for landscape perception are texture, form, pattern, smell, colour and sound. These perceptual qualities were thereby analyzed in this study. Thus, it is observed that there were variations in the frequencies of the perceptual qualities across all age distributions for both genders. According to Schachtel, (1959), the senses assoiciated with allocentricity can also percieve in an autocentric manner but recessively, and vice-versa

for senses associated with autocentricity. As such, in order to determine the perception modes adopted across the age distributions, the first three perceptual qualites with the highest frequencies were selected and categorized based on the senses associated with each of the perception modes. Frequencies were thereby used to determine the perception mode of each ethnicity. Van den Berg (2016) reinforced by highlighting that frequencies are used to summarize variables that are categorical in nature. Consequently, from the two perception modes, the three senses with the hghest frequencies were weighed and the perception mode with the most senses was thereby said to be adopted by the age distribution examined.

Considering the female gender of ages between 18-29 years, the three perceptual qualities with the highest frequencies were texture, sound and colour. Hearing and Sight are the allocentric senses which are responsible for the perceptual qualities; sound and colour, while only touch is an autocentric sense responsible for the perceptual quality; texture. Thus, for the female gender, the age distribution of 18-29 years is observed to adopt the allocentric perception mode for landscape settings. When the age distribution of 30 years or older was investigated, it was noted that the perceptual qualities; pattern, colour, texture and sound had the highest frequencies and the senses responsible, emphasized by Porteous (1996) are vision, sight, touch and hearing respectively. According to (Schachtel, 1959), the senses sight and hearing are associated with the allocentric perception mode, while the senses vision and touch are associated with the autocentric perception mode. Thus for the female gender of ages 30 or older, it was observed that both allocentric and autocentric perception modes were adopted.

For the male gender, only the ages beyond 18 years were considered because of the high number of data obtained from those categories. Thus for the age distribution of 18-29 years, it was observed that the perceptual qualities with the highest frequencies are texture, sound and form. The human senses responsible for percieving the perceptual qualities texture, sound and form are touch, hearing and vision respectively. The human sense; hearing is associated with the allocentricity while, touch and vision are associated with the autocentricity. Thus, the predominant perception mode adopted by the male gender of the ages between 18-29 years, is the autocentric perception mode. On the other hand, the age distribution of 30 years or older when examined, was observed to have the perceptual qualities; sound, texture and pattern with the highest frequencies, thus the human senses responsible for these perceptual qualities are hearing, touch and vision. Therefore the predominant perception mode adopted by male gender of ages 30 years or older is the autocentric perception mode.

In summary, it was discovered that of ages between 18-29 years, the female gender perceive landscape settings in an allocentric manner while the male gender adopt the autocentric perception mode. On the other hand, the age distribution of 30 or older, it was discovered that the female gender adopt both autocentric and allocentric perception modes while the male gender of the same age distribution percieve landscape settings in an autocentric manner.

4.3.4 Cross tabulation between education acquired and landscape perceptual qualities as regards gender

A cross tabulation analysis was carried out in order to investigate the relationship between the highest education acquired by respondents and the landscape perceptual qualities for both genders. Below shows the representation of the result of the analysis.

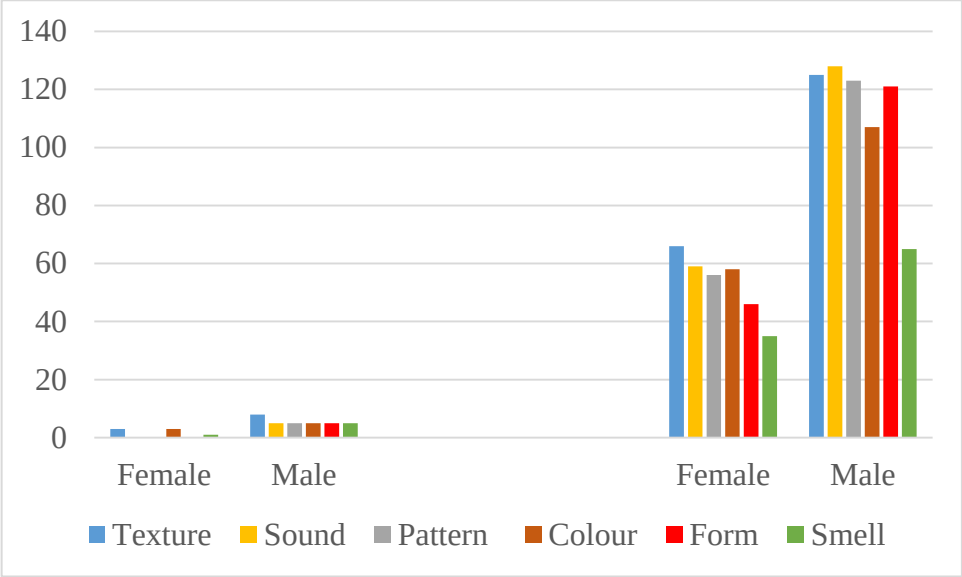

Figure 4.15: Landscape perceptual qualities according to education attained for male and female genders
Source: Author's Research work (2020)

From Figure 4.15, it was noted that variations exist in the perceptual qualities selected by respondents, on the left shows the result for respondents having secondary education as the highest education attained, while on the right, for respondents having tertiary education as the highest education obtained. Due to limited data gotten from respondents having secondary school as the highest education obtained, only the data for tertiary education was selected for further analysis. Thus below shows the result of the cross tabulation analysis for tertiary institution.

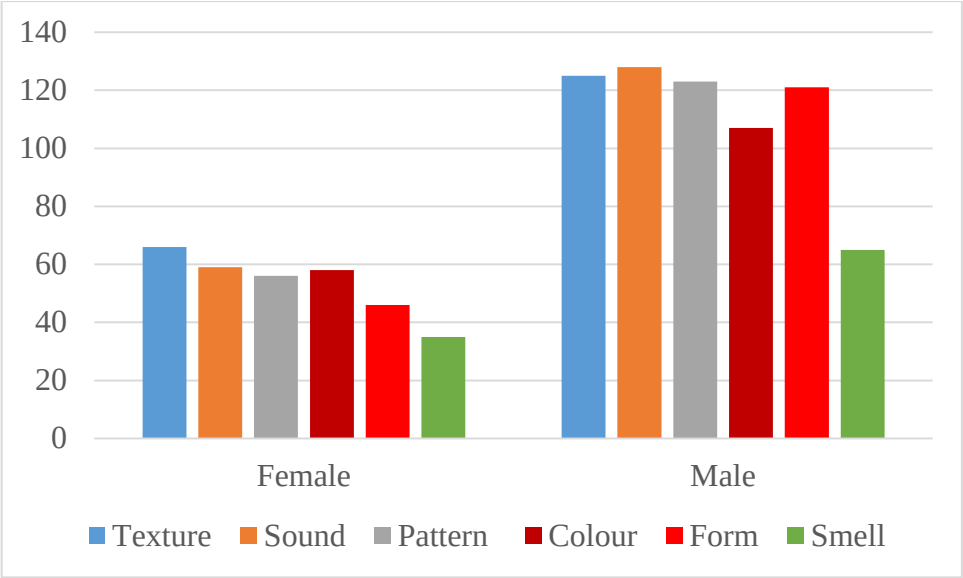

Figure 4.15: Landscape perceptual qualities based on gender only for tertiary education obtained
Source: Author's Research work (2020)

Figure 4.16 shows the result of the cross-tabulation between tertiary education for both genders, and it was discovered that the choice of lansdcape perceptual qualities for landscape settings differ with each gender. Considering the female gender, it was observed that the landscape perceptual qualities with the highest frequencies were texture, sound, and colour. Thus, the human senses responsible for these perceptual qualities are touch, hearing and sight respectively. Consequently, the predominant perception mode adopted by the female gender who have obtained tertairy education is the allocentric pereption mode. After examining the result for the male gender, it was discovered that the perceptual qualities for the highest frequencies were sound, texture and pattern. Hence, the predominant perception mode adopted by the male gender having obtained tertiary education is the autocentric perception mode. To further investigate the relationship between perceptual qualities and gender based on the highest education obtained, the Person's chi-analysis was carried out. Below is a table showing the result of this analysis.

Table 4.6: Statistical relationship between landscape perceptual qualities and gender as highest education obtained

Highest Education Obtained	*P*-value for Form	*P*-value for Sound	*P*-value for Pattern	*P*-value for Smell	*P*-value for Texture	*P*-value for Colour
Secondary School	0.063	0.502	0.737	0.289	0.494	0.737
Tertiary Institution	0.03	0.387	0.481	0.71	0.647	0.536

Source: Author's Research work (2020)

Table 4.6 shows the result of the Pearson's chi-square test expressing the relationship between the gender of respondents having obtained secondary and tertiary education and the landscape perception qualities. Considering the results gotten regards the tertiary education obtained, it is was observed that a statistical relationship exists only between the perceptual quality form and gender. This is as a result of the *p*-value of 0.03 yeilded showing that for people who have obtained tertiary education, landscape perceptual quality; form is dependent on gender. For secondary education on the other hand, no statistical relationship was seen to exist between all of the perceptual qualities and gender. Thus, it can be concluded that education may have an influence on the perceptual qualities of landscape-settings.

4.4 Structures and Facilities Identified to be Included in Recreational Parks

Being an experience-based approach as regards to the sampling method adopted by this study, the questions were open ended, allowing respondents to freely express themselves. Hence, when asked the kind of socio-cultural elements respondents prefer to encourage interaction in spaces, the following was identified to be present: A Place

that can allow both young and old to relax and interact; Traditional buildings; spaces for hiking and camping; hunting and fishing; Canoeing; kayaking and rafting; Biking; Rock Climbing; Horseback riding; The presence of animals sculptures; Games -these make such places interest in and brings people together; A little techy and incorporating education driven innovation especially for little children; art pieces and designs; Benches; A place for live band; Restaurants; Artefacts; Water bodies, vegetation; Art gallery; The incorporation of landscape inherent to human psychology; Cultural elements in form of fountains and sculpture as landscape elements; Traditional layout, traditional building forms finished with traditional finishes, use of traditional symbols for fountains and sculptures; Local games; and a photography studio.

4.5 Performance of Landscape Features in Recreational Parks in Minna, Niger State.

The only recreational park located in Minna, Niger State is the Murtala Park. Thus, the landscape features of Murtala park were analyzed based on the results of the landscape preferences from Figure 4.2, and the perceptual qualities of the landscape features present. Below is a table showing the performance of the landscape features in Murtala Park.

Table 4.7: The performance of the landscape features in murtala park based on landscape-setting preferences

Parameters Measured	Availability	Types of Landscape Setting Present	Preferred Settings	Potential Ethnicities Attracted	Potential Age Group Attracted	Potential Visitors Based on Education Attained
Ground Cover	✓	Open Smooth Landscape	Open Smooth Landscape	Gbagyi, Nupe, Hausa, Yoruba, Idoma and Igbo tribes	11 years or older	Secondary and Tertiary Education
Water	✗	None	Rivers (Water bodies)	None	None	None
Structures	✓	Gazabos and Lettable Shops	Event Centres, Eateries and Gazebos	Gbagyi, Nupe, Hausa, Yoruba, Idoma and Igbo tribes	18 years or older	Secondary and Tertiary Education

Source: Author's Research work (2020)

Table 4.7 shows the result of the performance of the landscape features in Murtala Park based on the bandscape-setting preferences of repondents. It is observed that of the three landscape settings most preferred by people, only two are found to be present in Murtala park. Although is seen that the potential recreational park goers cut across the indigenous ethnicites in Minna and age groups, this does not give reason for more visits to Murtala park. Perhaps the unavailability of water bodies in Murtala park might be one of the reasons for the lack of visit at Murtala park. According to World Data (2020), Niger State is one of the warmest regions in Nigeria with an average temperature of 34 degree centigrade, thus the availability of water bodies in recreational parks in Minna has the potential to solve the problem of heat, it can give reasons to people to visits

recreational parks in Minna more frequently. This is because the cooling effect of water bodies serves as a means of escape from the harsh weather conditon of Minna.

4.6 Performance of Landscape Features in Murtala Park Based on Landscape Perceptual Qualities

The performance of the landscape features in Murtala park were analyzed based on the views of the respondents which was in terms of percentages and frequencies. Thus the performance of the landscape features were evaluated across various indicators as shown in Table 4.6.

Table 4.8: The performance of the landscape features in murtala park based on the landscape perceptual qualities

Parameters Measured	Availability	Landscape Feature Present	Dominant Perception Mode Adopted	Potential Ethnicities Attracted	Potential Age Group Attracted	Potential Visitors Based on Education Attained
Sound	✓	Trees	Allocentricity	Gbagyi, Nupe, Hausa Yoruba, Idoma and Igbo tribes	All age groups	Only Tertiary Education
Texture	✓	Trees	Autocentricity	Gbagyi, Nupe, Hausa, Yoruba, Idoma and Igbo tribes	All age groups	Secondary and Tertiary Education
Pattern	✓	Walkways	Autocentricity	Gbagyi, Nupe, Hausa, Yoruba, Idoma and Igbo tribes	All age groups	Only Tertiary Education
Colour	✓	Playing Facilities and Trees	Allocentricity	Gbagyi, Nupe, Hausa. Yoruba, Idoma and Igbo tribes	All age groups	Secondary and Tertiary Education
Form	✗	None	Autocentricity	None	None	None
Smell	✓	Trees	Autocentricity	Gbagyi, Nupe, Hausa. Yoruba, Idoma and Igbo tribes	11 years or older	Secondary and Tertiary Education

Source: Author's Research work (2020)

Table 4.8 expresses the various perceptual qualities of the landscape features in Murtala park and the performances across ethnicities, age distibution and highest education attined by respondents. It was observed that of all six landscape perceptual qualities

considered, the form of landscape features was not utilized in the aethetics of the park. Also, though the other five perceptual qualites were expressed in the landscape features, it was done to a limited degree as only tress, walkways and playing fercilities were utilized. It was also observed that, potentially, majority of the social groups are likely to visit Murtala park in Minna. A slight variation is observed for the perceptual qualities; sound, pattern and form where the park is more likely to be visited by only those who have attained tertairy education. As seen in Table 4.8, the limited landscape features in Murtala park experessing the various landscape perceptual qualities could suggest a dissatisfcation in the overall asethetics of the park by recreational park goers. Consequently, this may affect the fequency of visits to Murtala park. To shed some light investigating the performance of Murtala park, below are figures showing the landscape features in Murtala park.

Plate I: Presence of lettable shops in Murtala Park, Minna
Source: Author's Research work (2020)

The presence of structures such as lettable shops are found in Murtala park as seen in Plate 1. These include offices, a multi-purpose space and a photo studio. The lettable shops are placed at close proximity to the entrance of Murtala park.

Plate II: Presence of gazebos in Murtala Park, Minna
Source: Author's Research work (2020)

The presence of five gazebos are found in Murtala park. From Plate 2, it is observed that the gazebo structures are not kept in good condition as the wall paints are noticed to peel off. Although the roof of the gazebos are observed to still be in working condition as seen in Plate 2.

Plate III: Presence of trees, pedestrian bridges and walkway in Murtala Park, Minna
Source: Author's Research work (2020)

The presence of trees, pedestrian bridges and walkways are observed to be found in Murtala park as seen in Plate 3. The walkway is noted to be paved with interlocks and the trees are observed to be arranged in a random manner in the park. There is the

absence of shurbs and hedges which helps to organize movement, thus park visitors are not guided in movement though out the park.

Plate IV: Ground cover present in Murtala Park, Minna
Source: Author's Research work (2020)

From Plate IV, it is noticed that there is the lack of green area (open smooth landscape) in Murtala park. A vast area of the ground cover is occupied by sand with only little grass or green area found on the surface of the park. Thus with the absence of open smooth landscape, recreational park visitors are more prone to be exposed to the harsh weather condition of the location, Minna.

After taking into account the performance and conditon the exisiting recreational park in Minna, Murtala park, a design proposal was made taking into account the preferences and people's perception of landscape in recreational park design.

4.7 Findings

From the analyses above, numerous findings and insights were revealed about view of landscape-settings and also the landscape perceptual qualities in recreational parks design. It was discoved that people consider recreational parks to be best to spend leisure times. It was also realized that of all the preferences of landscape suggested by literature reviewed, the presence of structures, open smooth landscape and waterbodies were most desirable by respondents. This suggests, because of nature of the climate of Minna, the residents would need facilities that would serve as a protection from the harsh weather condition, hence the preference for structures, open smooth landscape and water bodies. These landscape-setting preferences were thus cross-tabulated with various social group factors (age, gender, ethnicity and the highest education obtained) to examine the relationship between the variables. The Pearson's chi-square tests were also carried out to gain insights about the statistical relationship between variables.

Selected ethnicities were highlighted to examine the character and factors influencing the choice of certain variables. As such, when the preferences for landscape settings were cross-tabulated with gender for the indigneous tribes in Minna; the Nupe, Hausa and Gbayi tribe, it was discovered that no statistical relationship exists between gender and the preferences for landscape settings. Although, it was discovered that, for the male a gender, some similarities exist between the Idoma tribe and the Yoruba tribe in the preference for structures, open smooth landscape and water bodies as settings in recreational parks design.

The relationship between some socio-cultural group factors and landscape perceptual qualities were analysed also for selected ethnicities. Thus, it was realized that for the

female gender, the three indigneous tribes in Minna; the Nupe, Hausa and Gbagyi tribes all adopt the autocentric perception mode for landscape settings. The Igbo and Idoma tribe adopt the allocentric perception mode while the Yoruba tribe percieve landscape setting through autocentricity and allocentricity. For the male gender on the other hand, it was discovered that all three indigenous ethnicities (the Nupe, Hausa and Gbagyi tribe) adopt the autocentric perception mode when percieveing landscape settings as well. The Igbo, Yoruba and Idoma ethnicities also percieve landscape settings via autocentricity. The Pearson's chi-square test gave insights about the relationship between gender and the landscape perceptual quality; form. It was discovered that for the Idoma tribe, the perception of form is dependent on gender.

Other socio-cultural factors influencing the perception of landscape were cross-tabulated to examine how people percieve landscape. As such, the preference for landscape settings were cross-tabulated with gender across various age distributions. It was discovered that for ages beyond 30 years, a statistical relationship exists between gender and the preference for structures, this was as a result of the 0.002 *p*-value yeilded. It can thus be said that for the ages of 30years or older, the preference for strcutures as a landscape setting in recreational parks is dependent on gender. No statistical relationship was found for the ages 18 -29 years between gender and any of the landscape settings.

When a cross-tabulation analysis was carried out to examine the relationship between landscape perceptual qualities and gender across the various age distributions, it was discovered that the male gender for ages 18 or older adopt the autocentric perception mode. For the female gender on the other hand, it was realized that of ages 18 - 29

years, the allocentric perception mode is adopted while the ages beyond 29 years adopt both the autocentric and allocentic perception modes in percieving landscape settings for recreational parks.

Considering the education attained by respondents and how the preference of landscape settings are influenced by the level of education, a cross-abulation analysis was carried out. It was discovered that a satistical relationship exists, for the female gender, between the level of education attained and the preference for water bodies in recreational park design. The *p*-value yeilded was 0.004 which shows that the preference for water bodies in recreational park design is influenced by the level of education obtained.

Lastly, the perceptual qualities of landscape settings were cross-tabulated with gender for the various level of education obtained. The result of the analysis showed that females having attained tertiary education, were discovered to adopt the allocentric perception mode for the perception of landscape settings. On the other hand, it was discovered that the male gender adopt the autocentric perception mode for peceiving landscape settings in recreational parks.

In conclusion, The indigeneous ethnicites in Minna, Niger State prefer the presence of structures, open smooth landscape and water bodies as landscape settings in recreational parks. From all the findings discovered, it can also be concluded that the female gender influenced by some socio-cultural factors like education obtained, age and ethnicity, adopt both allocentricity and autocentricity in the perception of landscape settings. For the male gender, the same phenomenon is observed to exist, thus influenced by the

socio-cultural factors, the male gender adopt only autocentricity in the perception of landscape settings in recreational parks.

CHAPTER FIVE

5.0 IMPLEMENTATION OF RESEARCH IN PROPOSED DESIGN

5.1 Integration of Landscape-setting Preferences in the Proposed Recreational Park Design

As the data analysed brought about inferences and insights as to what people percieve landscape to be in recreational parks, key finding were noted. A recreational park design was purposed adopting the major finding discovered and this is discussed in the sections below.

To address the problems regarding the recreational park in Minna, a recreationa park design was proposed. Thus, the preferences for landscape settings by the respondents were implemented in the proposed recreational park design in order to have an integrated design with people's perception. Thus, Table 5.1 shows the result of the performance of the proposed recreational park using the social group factors and landscape preferences as indicators.

Table 5.1: The performance of the landscape features in the proposed recreational park design as regards landscape-setting preferences

Parameters	Availability	Types of Landscape Setting Present	Preferred Settings	Potential Ethnicities Attracted	Potential Age Group Attracted	Potential Visitors Based on Education Attained
Ground Cover	✓	Open Smooth Landscape	Open Smooth Landscape	Gbagyi, Nupe, Hausa, Yoruba, Idoma and Igbo tribes	All age groups	Secondary and Tertiary Education
Water	✓	Bosso Dam (Water body)	Rivers (Water bodies)	Gbagyi, Nupe, Hausa, Yoruba, Idoma and Igbo tribes	All age groups	Secondary and Tertiary Education
Structures	✓	Event Centre, Gazebos, Shelter, Restaurant, Sport Centres, Swimming Pool and Administration Offices	Event Centres, Eateries and Gazebos	Gbagyi, Nupe, Hausa, Yoruba, Idoma and Igbo tribes	All age groups	Secondary and Tertiary Education

Source: Author's Research work (2020)

The performance of the proposed recreational park design shown in Table 5.1 expresses the areas where landscape features can be utilizer to achieve higher recreational park visits and better recreational experience by indivdual. Thus from the analysis in Table 5.1, it is observed that the proposed design offers better performance in term of ensuring that all social groups can have recreational needs that are satisfiable.

5.2 Integration of landscape perceptual qualities in the proposed recreational park design

The various perceptual qualities of landscape features were adopted in the proposed recreational park design. These perceptual qualities; texture, colour, form, pattern, sound and smell, were used as indicators for the satisfaction of social groups investigated. Thus Table 5.2 expresses the performance of the landscape perceptual qualities of the landscape features implemented in the proposed design.

Table 5.2: The performance of the landscape features in the proposed recreational park design as regards landscape perceptual qualities

Parameters Measured	Availability	Landscape Feature Present	Dominant Perceptual Mode Adopted	Potential Ethnicities Attracted	Potential Age Group Attracted	Potential Visitors Based on Education Attained
Sound	✓	Dam (water body), Trees, Shrubs,	Allocentricity	Gbagyi, Nupe, Hausa, Yoruba, Idoma and Igbo tribes	All age groups	Secondary and Tertiary Education
Texture	✓	Trees, Maze, Shrubs, Flowers	Autocentricity	Gbagyi, Nupe, Hausa, Yoruba, Idoma and Igbo tribes	All age groups	Secondary and Tertiary Education
Pattern	✓	Walkways, Maze	Autocentricity	Gbagyi, Nupe, Hausa, Yoruba, Idoma and Igbo tribes	All age groups	Secondary and Tertiary Education
Colour	✓	Trees, shrubs, Flowers, Bosso Dam (waterbodies)	Allocentricity	Gbagyi, Nupe, Hausa. Yoruba, Idoma and Igbo tribes	All age groups	Secondary and Tertiary Education
Form	✓	Event centre, maze, pedestrian bridge	Autocentricity	Gbagyi, Nupe, Hausa, Yoruba, Idoma and Igbo tribes	All age groups	Secondary and Tertiary Education
Smell	✓	Flowers	Autocentricity	Gbagyi, Nupe, Hausa. Yoruba, Idoma and Igbo tribes	11 years or older	Secondary and Tertiary Education

Source: Author's Research work (2020)

Table 5.2 expresses the various aspects whereby the landscape perceptual qualities of landscape features were implemented in the proposed recreational park design. Thus, it

is observed that the various perceptual qualities; texture, form, pattern, colour sound and smell were utilized in the landscape features present in the proposed design. From the investigation in Table 5.2, it is noted that due to this implementation, the chances of having all social groups satisfied with the aesthetics of the proposed recreational park. This consequently can be revealed in better recreational experiences and ultimately increase the frequency of recreational park visit. Thus, below are figures showing the various area were the landscape perceptual qualities and landscape preferences of landscape features were incorporated in the proposed design.

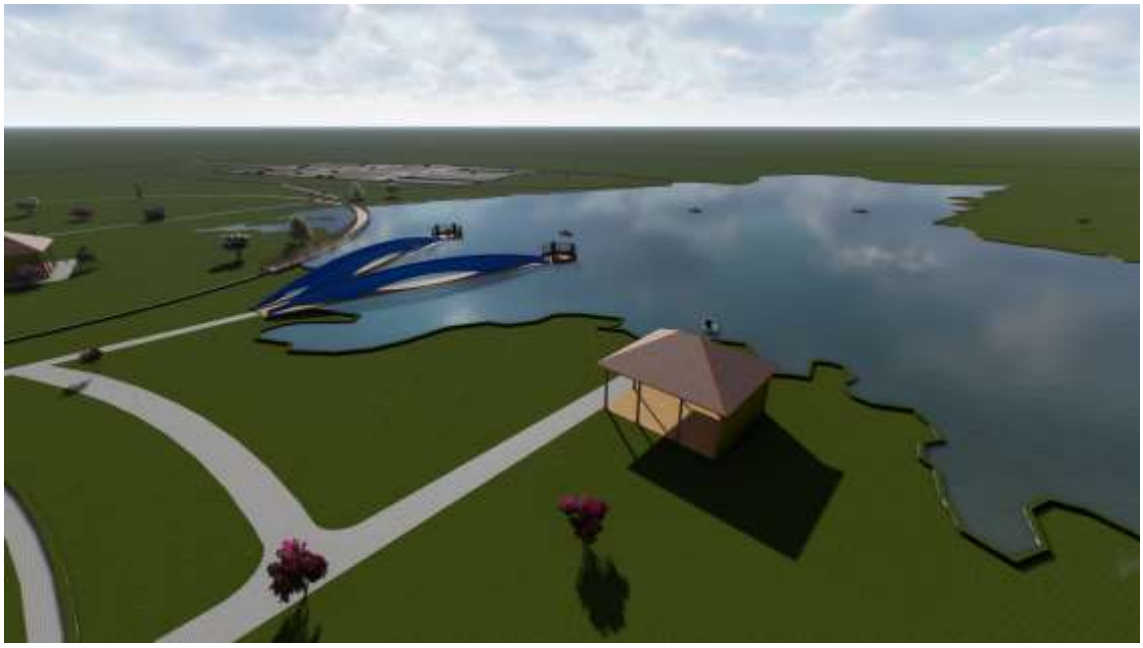

Plate V: Bosso dam utilized for the preference of waterbodies as a landscape setting
Source: Author's Research work (2020)

Plate V shows the way Bosso Dam was utilized to optimize recreational expereince by incorporating canoe rides and pedestrian bridges projected towards the dam. This is to allow more contact with the water body present in the recreational park.

Plate VI: Open smooth landscape incorporated in the proposed recreational park Design
Source: Author's Research work (2020)

The preference for an open smooth landscape as a landscape-setting was implemented in the proposed recreational park design. Thus, Plate VI shows that a vast area of the recreational park is green as opposed to open coarse landscape. This potentially helps to reduce the impact of the heat on recreational park visitors.

Plate VII: An event centre as the main structure incorporated in the proposed recreational park design
Source: Author's Research work (2020)

As seen in Plate VII, the preference for structure as a landscape setting to be present in recreational parks was also incorporated in the proposed recreational park design. Thus, the event centre that comprises of functional spaces such as an auditorium, lettable shops, exhibition spaces and banquet halls. The spaces selected in the event centre is to

attract possible vendors and business owners to the park, which in turn ensures frequency in park visits.

Plate VIII: Colour as a perceptual quality of landscape features incorporated in the proposed recreational park design
Source: Author's Research work (2020)

The colour of shrubs and trees were selected due to the perceptual quality possessed. Thus, as seen in Plate VIII, the Indian Hawthorne plant was selected as the shrub type surrounding the event centre which adds to the overall aesthetics. Also, the roof colour of the event centre was coloured to resemble the natural colour of the abdomen of a bee. This also adds to the total aesthetics of the recreational park.

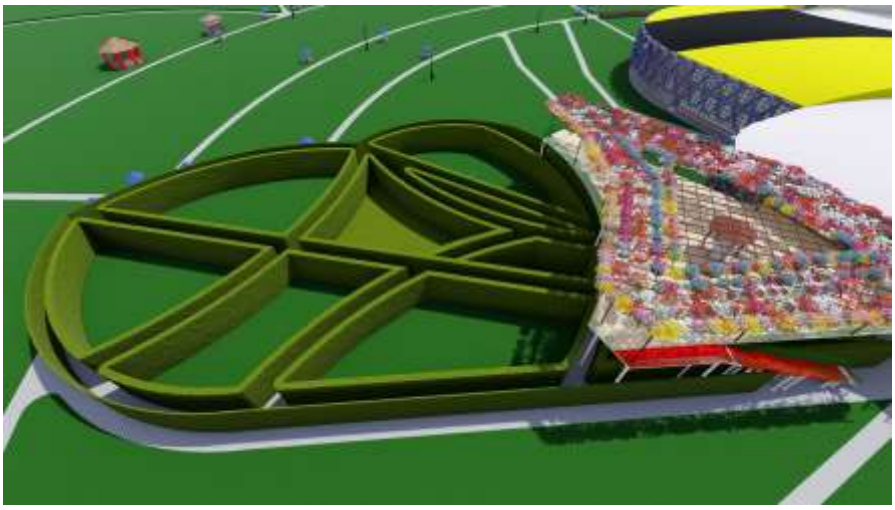

Figure Plate IX: Pattern and smell as perceptual qualities of landscape features incorporated in the proposed recreational park design
Source: Author's Research work (2020)

Plate IX shows a maze structure placed beside the event centre which is patterned in a way to resemble the wing of a bee. Also the flowered placed on the pergola on top of the sit out exudes a pleasant fragrance to visitors located at surrounding spaces. This generally aids in the recreational experience of visitors.

Plate X: Texture as a perceptual quality of landscape feature incorporated in the proposed recreational park design
Source: Author's Research work (2020)

The choice of the plant used as the maze was utilized to enable recreational park goers experience the texture of the landscape feature as seen in Plate X. Hence, the plant type

used for the maze wall is the Surinam Cherry which is a tall growing shrub. This tall shrub allows visitor easye in reaching and touching the maze wall regardless of the individual's height.

5.3 Conclusion

In summary, the result of the analyses conducted were gathered and insights were generated to gain better understanding of the implication of people's perception of landscape in recreational park design. It is thereby admonished that designers and recreational park mangers should ensure have these key findings adopted for landscaping in recreational park design.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

With the findings discovered a more in depth study has been done as regards people's perception of landscape in recreational park design. Therefore the following recommendations categorized according to landscape perference and landscape perceptual qualities should be adopted by designers and recreational park managers.

6.1 Conclusion

Due to the psychological satisfaction natural landscaping elements bring to users, recreational park designs in Minna should include natural landscaping features with as little artificial element as possible, to aid in adequate and proper relaxation for its users. It should be ensured that landscape settings such as open smooth landscape and waterbodies that aid in the absoption of heat waves from the high temperature of the locale, should be incorporated in recreational parks.

In this study, it was also discovered that the allocentric and autocentric perception modes are adopted by both the female and male gender, thus the perceptual qualities experienced by the human senses should be accentuated in recreational park designs. The landscape perceptual qualities like texture, pattern, colour, sound and form should be emphasised in landscape settings so as to optimize the recreational experience of people in recreational parks.

6.2 Recommendation based on the Implementation of Landscape Preferences and Landscape Perceptual Qualities in Recreational Park Design

From the findings of this study, it was discovered that due to the climatic condition of the study area, Minna, the presence of landscape settings; structures open smooth landscape and water bodies were desired in recreational parks. Thus, it is recommended that in recreational parks design and management, it should be ensured that landscape settings like structures, open smooth landscape and rivers are fused. Therefore, landscape architects and recreational park managers should ensure the presence of the landscape settings; open smooth, structures and waterbodies be incorporated in recreational parks found in Minna.

The landscape perceptual qualities like texture, pattern, colour, sound and form should be emphasised in the setting of landscape features so as to optimize the recreational experience of people in recreational parks. Landscape architects are thus encouraged to employ the use and empahsis of landscape perceptual qualities as it has been observed that people in Minna consider these perceptual qualities to add to the beauty and aesthetics of recreational parks in Minna.

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APPENDICES

Appendix A: Observation Schedule to Examine Performance of the Landscape Features in Murtala Park Based on the Landscape-setting Preferences

Parameters	Availability	Types of Landscape Setting Present	Preferred Settings	Potential Ethnicities Attracted	Potential Age Group Attracted	Potential Visitors Based on Education Attained
Ground Cover						
Water						
Structures						

Appendix B: Observation Schedule to Examine the Performance of Murtala Park Based on the Landscape Perceptual Qualities of the Landscape Features

Parameters	Availability	Landscape Feature Present	Dominant Perceptual Mode Adopted	Potential Ethnicities Attracted	Potential Age Group Attracted	Potential Visitors Based on Education Attained
Sound						
Texture						
Pattern						
Colour						
Form						
Smell						

Appendix C: Questionnaire to Investigate People's Perception of Landscape in the Design of Recreational Parks in Minna

This survey is to generate data on people's perception of landscape in the design of recreational parks for an MTech thesis at Federal University of Technology Minna, conducted by Aboh Mercy Enotse, Department of Architecture. Please your honest opinion is required. Thank you

Information based on Social Group Factors

i. Age range

(10yrs and younger ☐) (10 – 17years ☐) (18- 30 Years ☐)
(30 years and older ☐)

ii. Ethnicity (Tribe)

……

iii. Place of residence (urban or rural)

……

iv. Gender Male ☐ Female ☐

v. Highest Education Obtained: Nursery School ☐ Primary School ☐
Secondary School ☐ Tertiary Institution ☐

Parameters to be measured

i. Please select from the options below the type of Landscape Feature you prefer

a. Open Smooth Landscape ☐
b. Open Coarse Landscape ☐
c. Structures ☐
d. Agrarians ☐
e. Rivers (water bodies) ☐
f. Others (Please mention) ☐

……
……

ii. What type of building would you expect to be found in recreational parks?

……
……

iii. Please select from the options below, the reason(s) why you visit recreational parks.

a. To recollect or create memories with loved ones. ☐
b. Recreational parks serve as a place to associate or interact with people ☐

c. Recreational parks are best to spend leisure times. ☐

d. Other (Please specify)

……
……

iv. What, in your opinion adds Beauty or Aesthetics to a recreation park?

a. The form of landscape features ☐

b. The pattern landscape features create ☐

c. The colour of landscape features ☐

d. The texture of the landscape features ☐

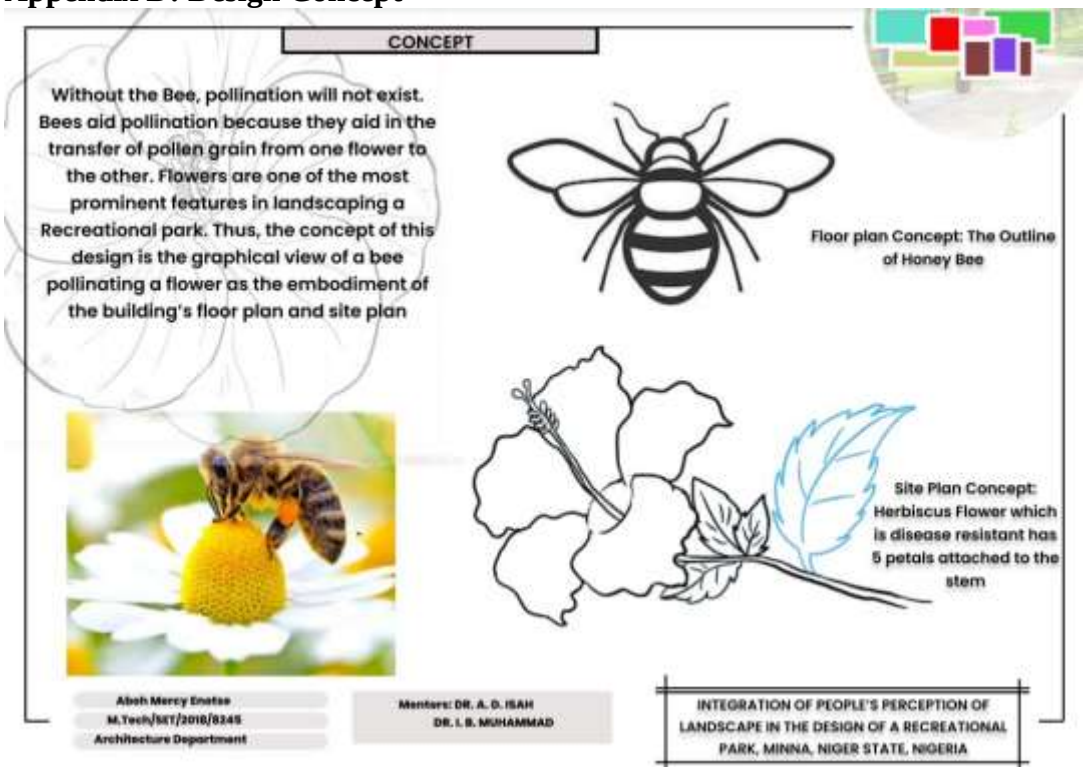
e. The smell of landscape features ☐

f. What can be heard from landscape features (sound) ☐

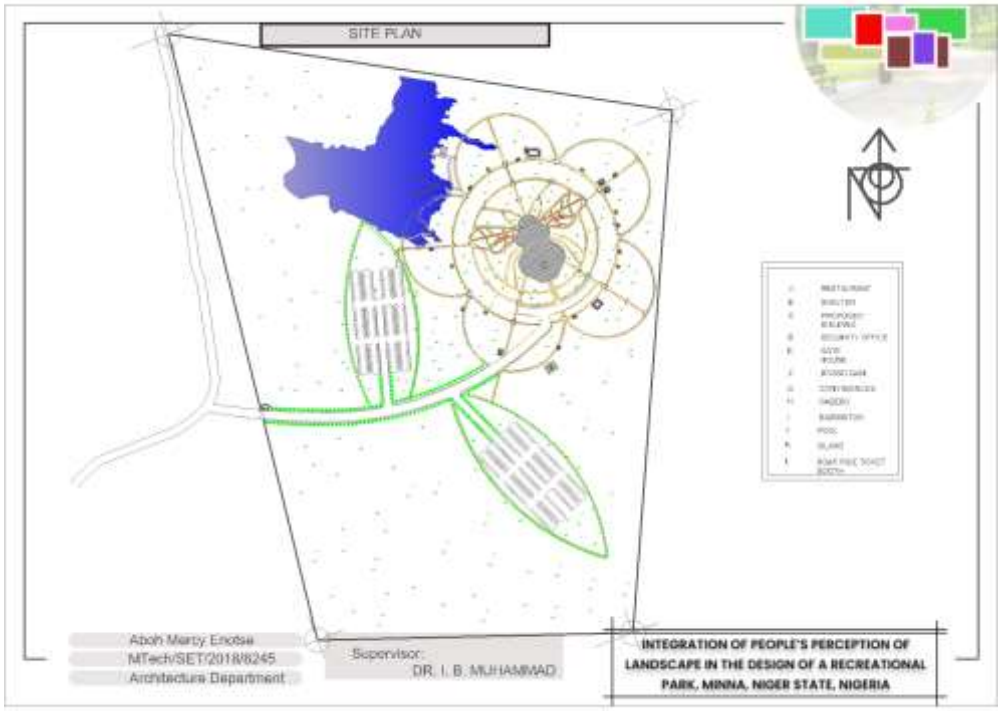
g. Other (Please specify)

……
……..
……
……..

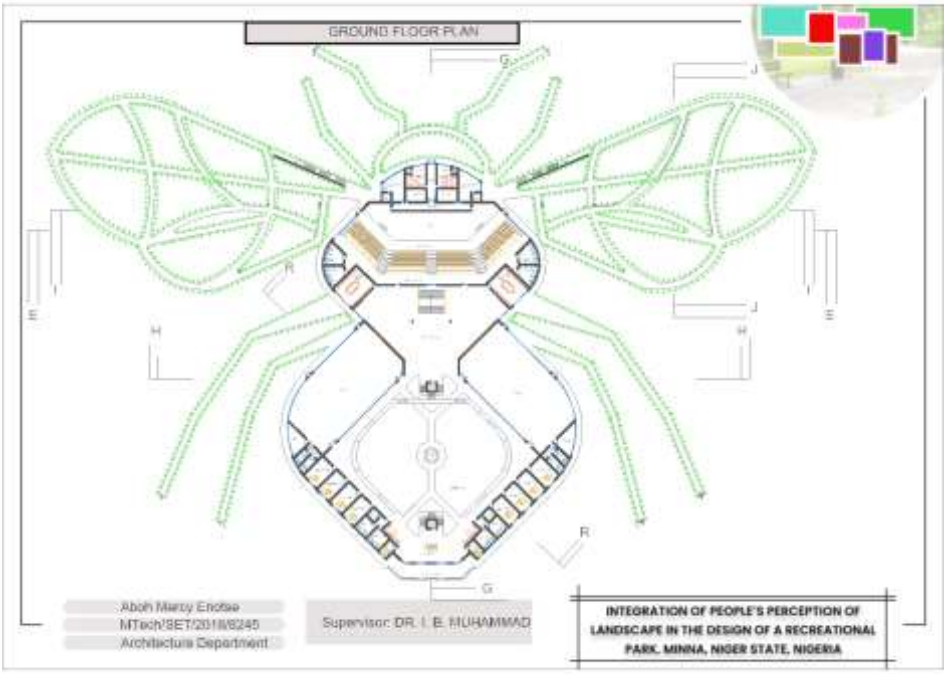
Appendix D: Design Concept



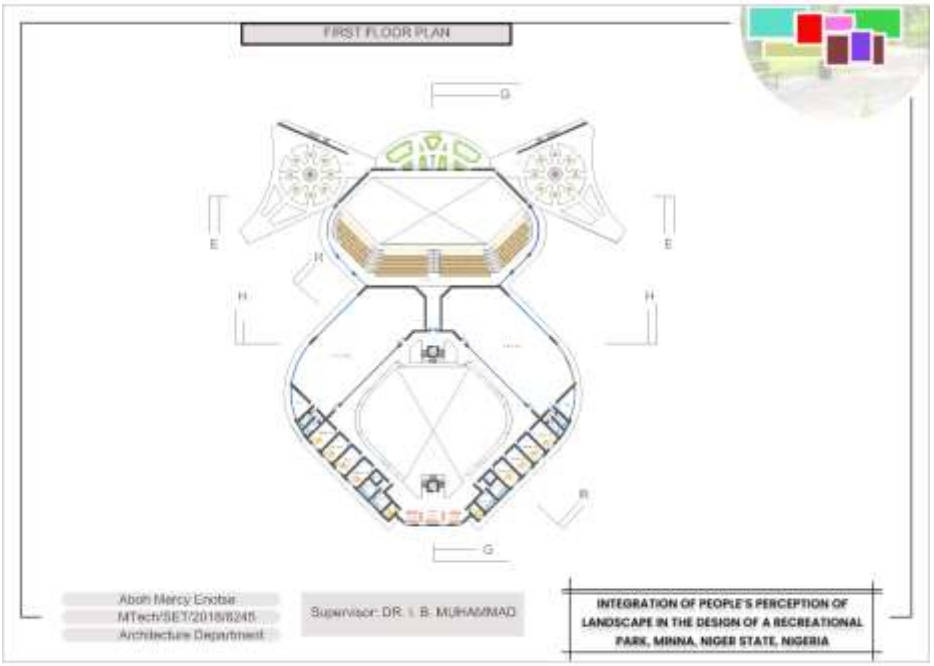
Appendix E: Site Plan



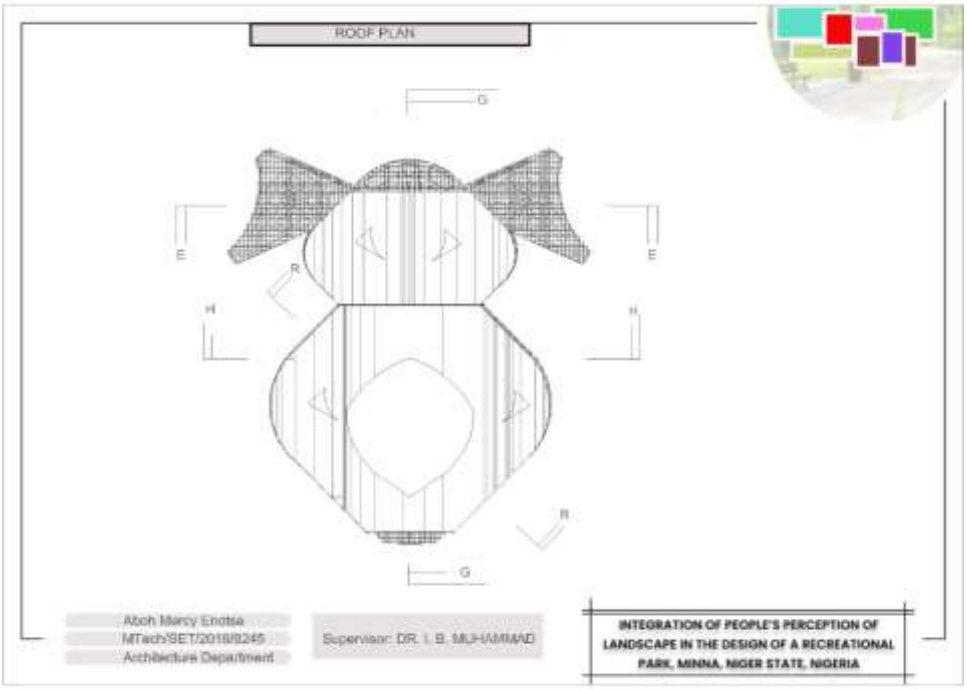
Appendix F: Ground Floor Plan



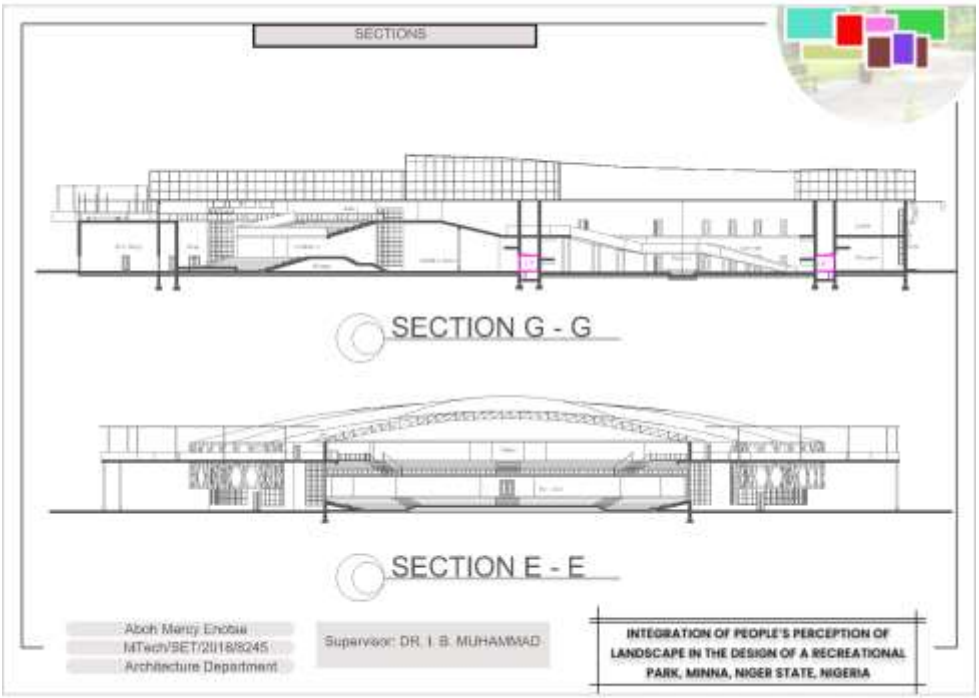
Appendix G: First Floor Plan



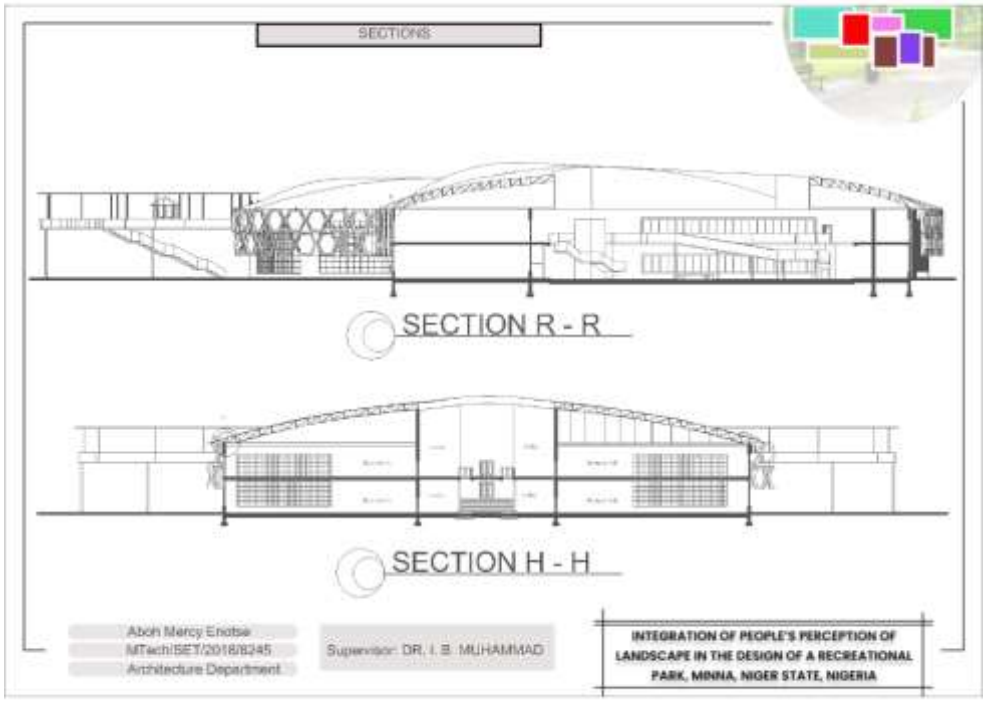
Appendix H: Roof Plan



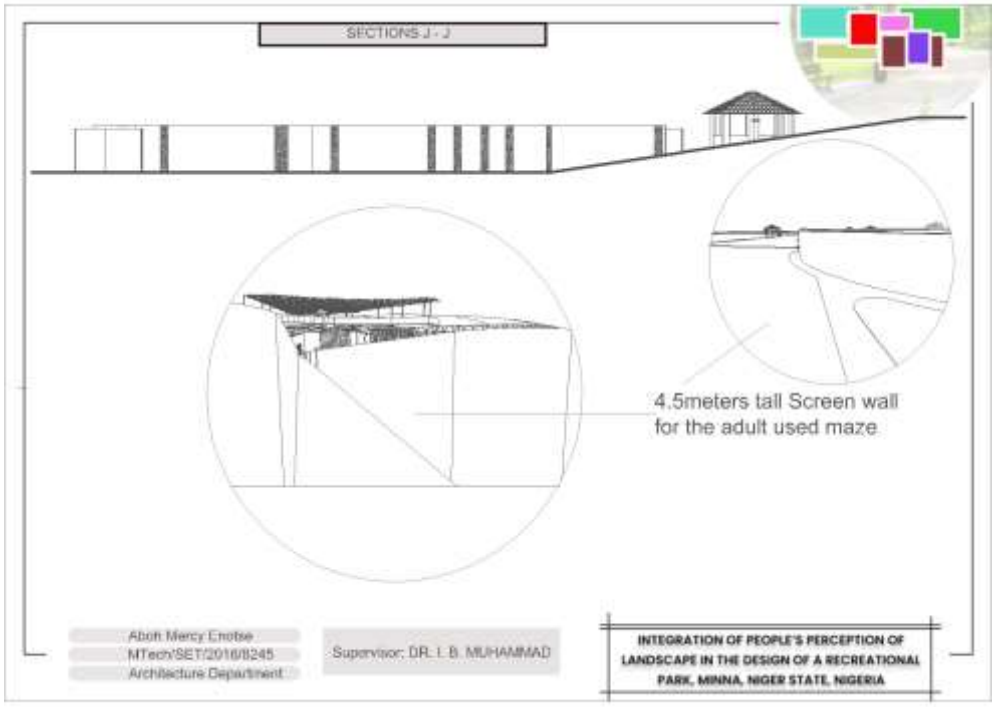
Appendix I: Sections G-G and E-E



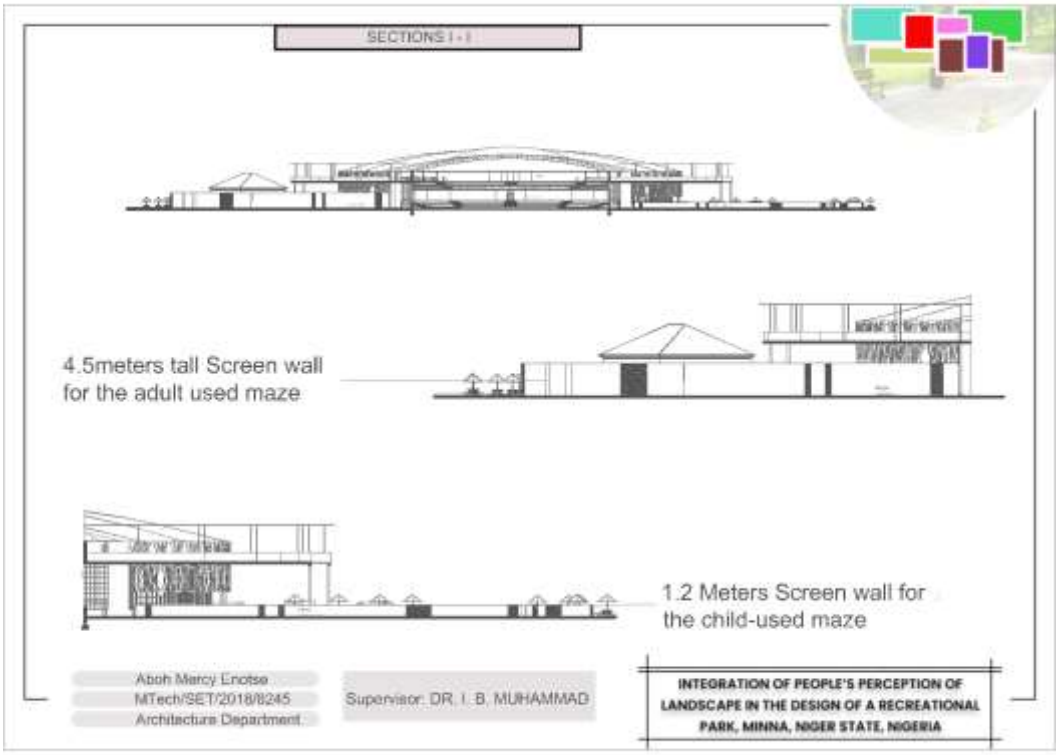
Appendix J: Sections R-R and H-H



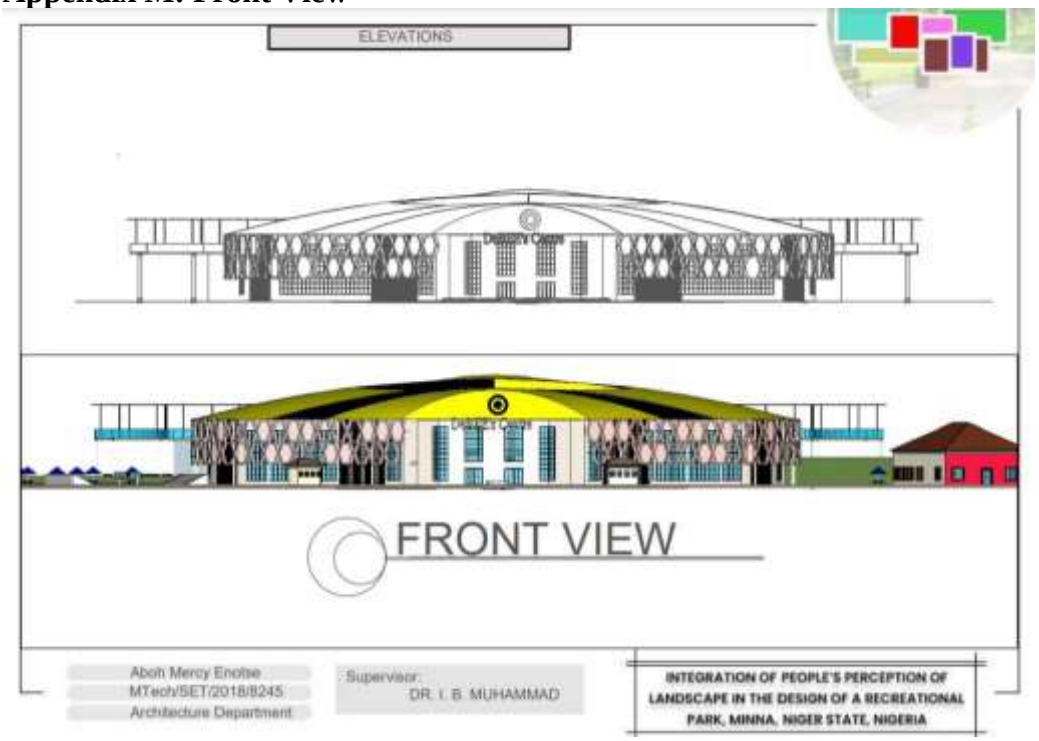
Appendix K: Section J-J



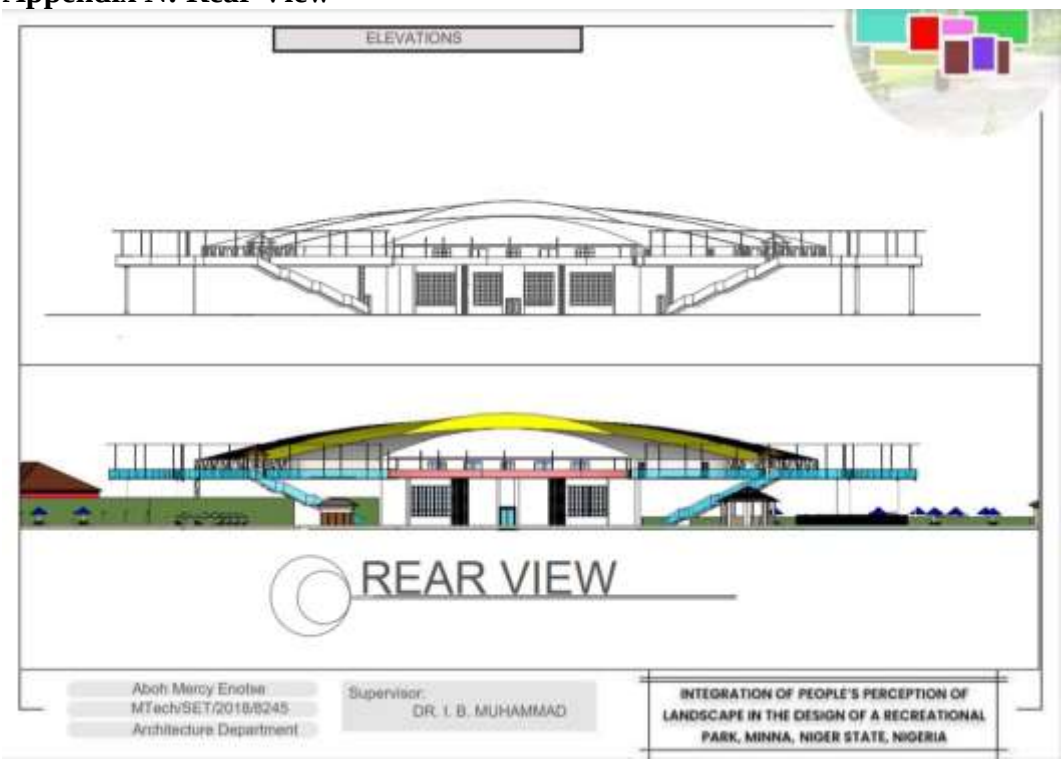
Appendix L: Section I-I



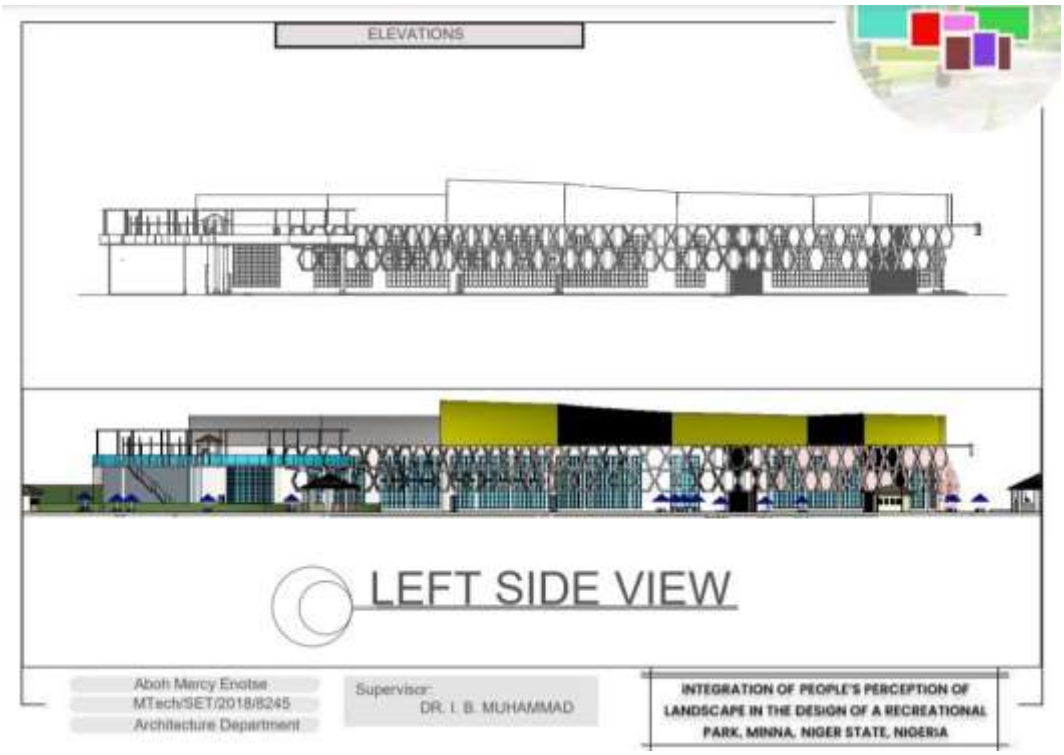
Appendix M: Front View



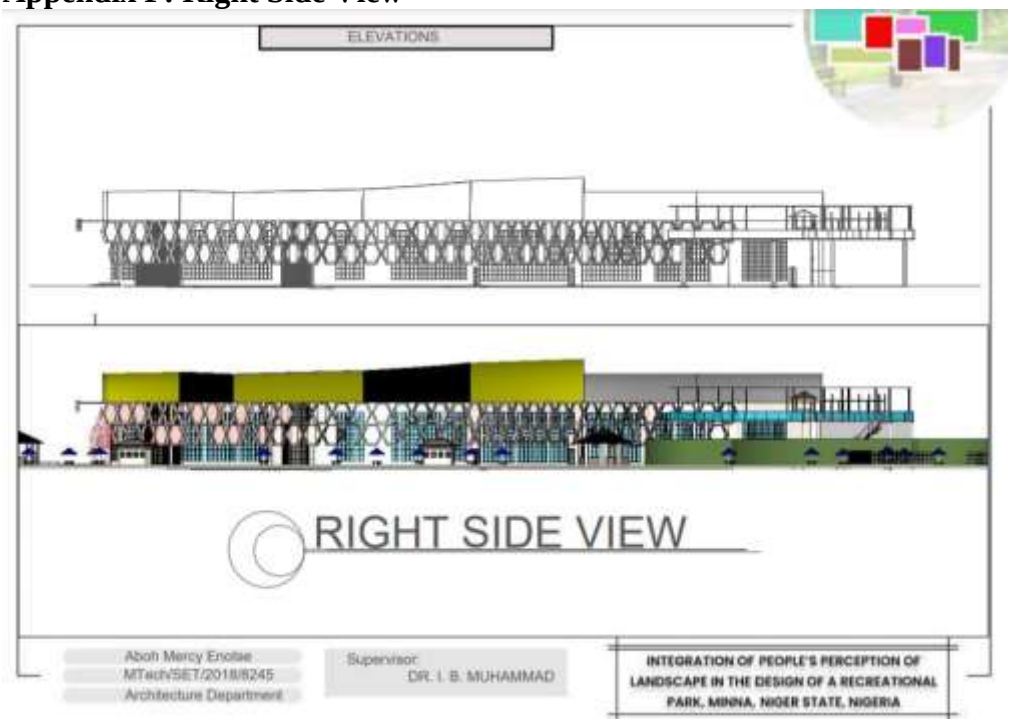
Appendix N: Rear View



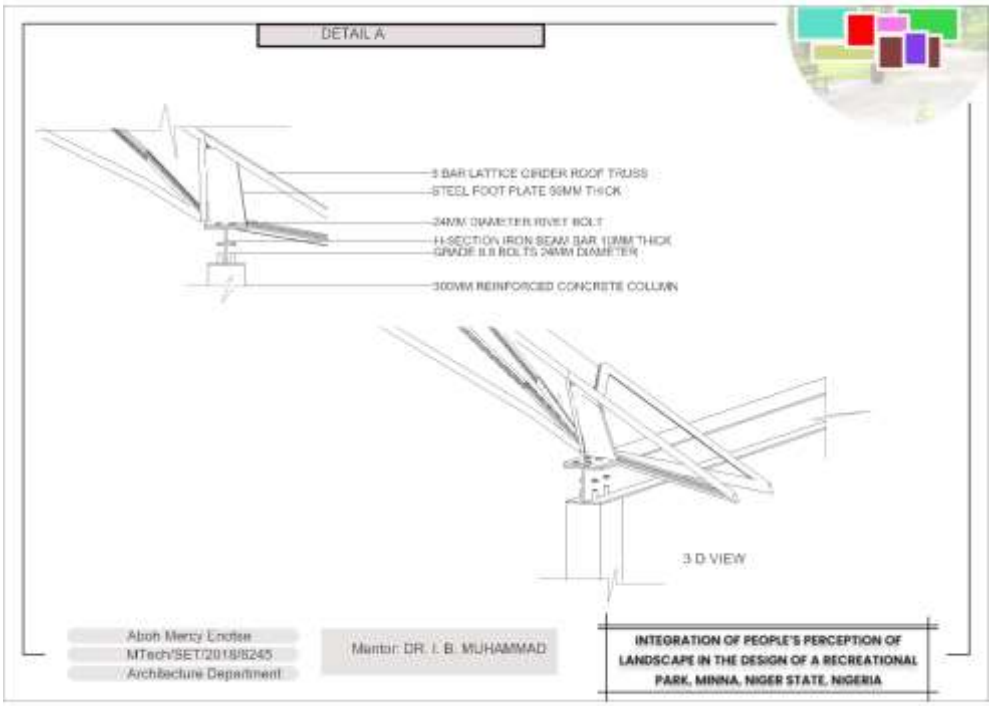
Appendix O: Left Side View



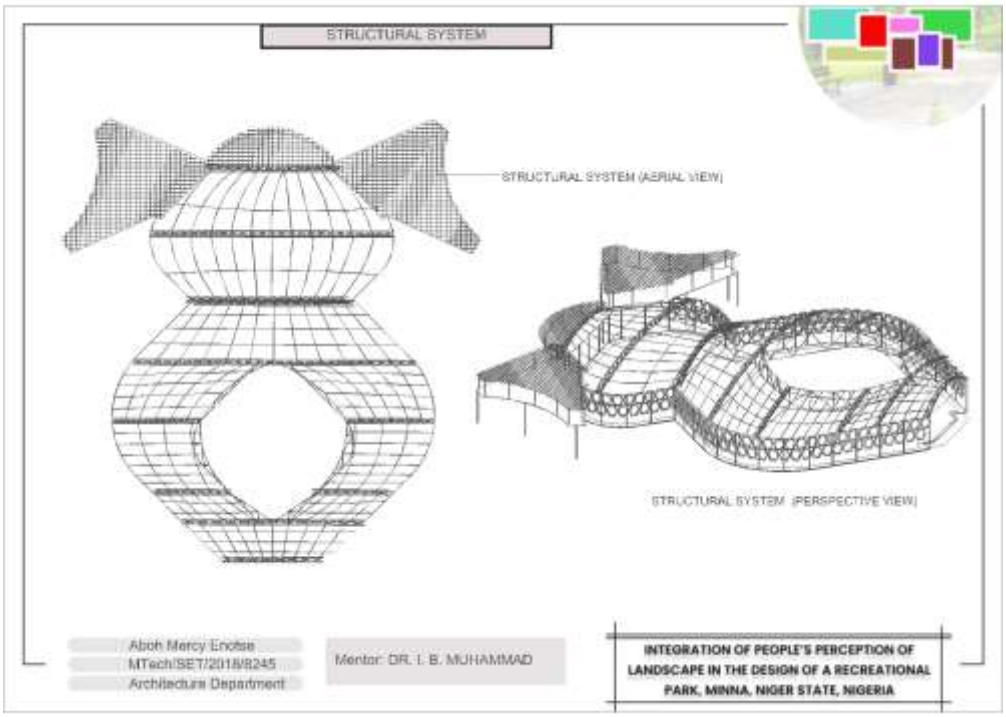
Appendix P: Right Side View



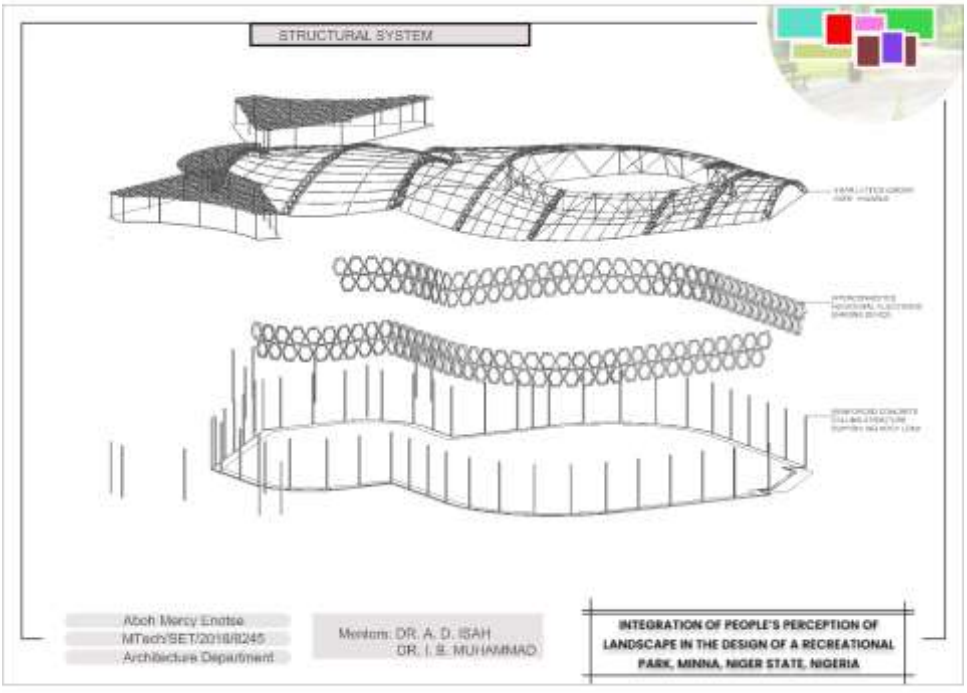
Appendix Q: Detail A



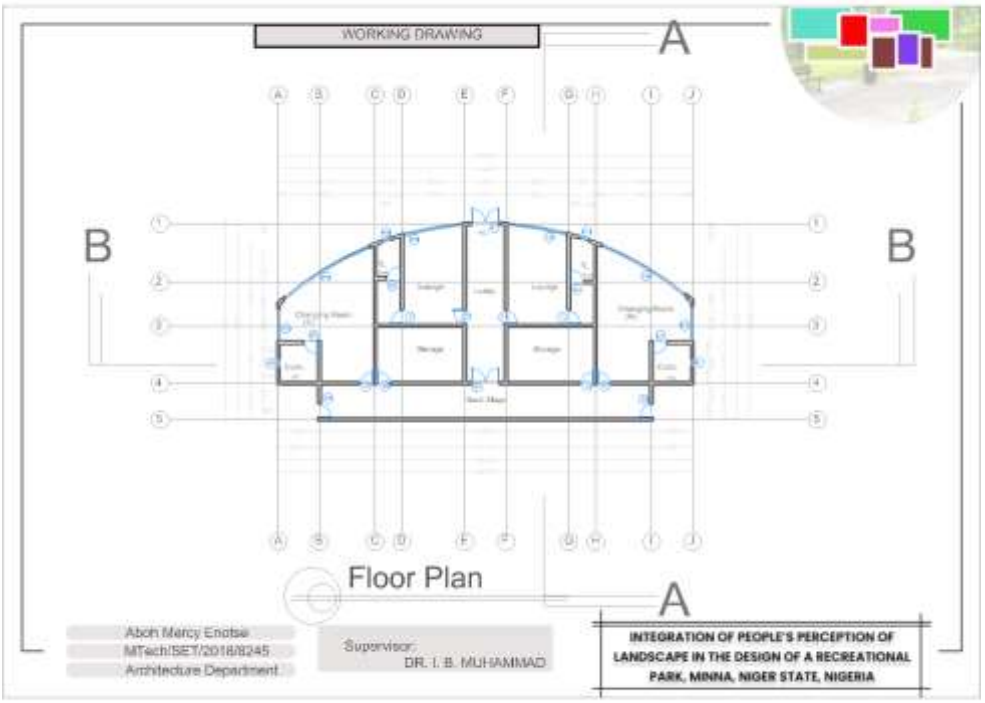
Appendix R: Structural System 1



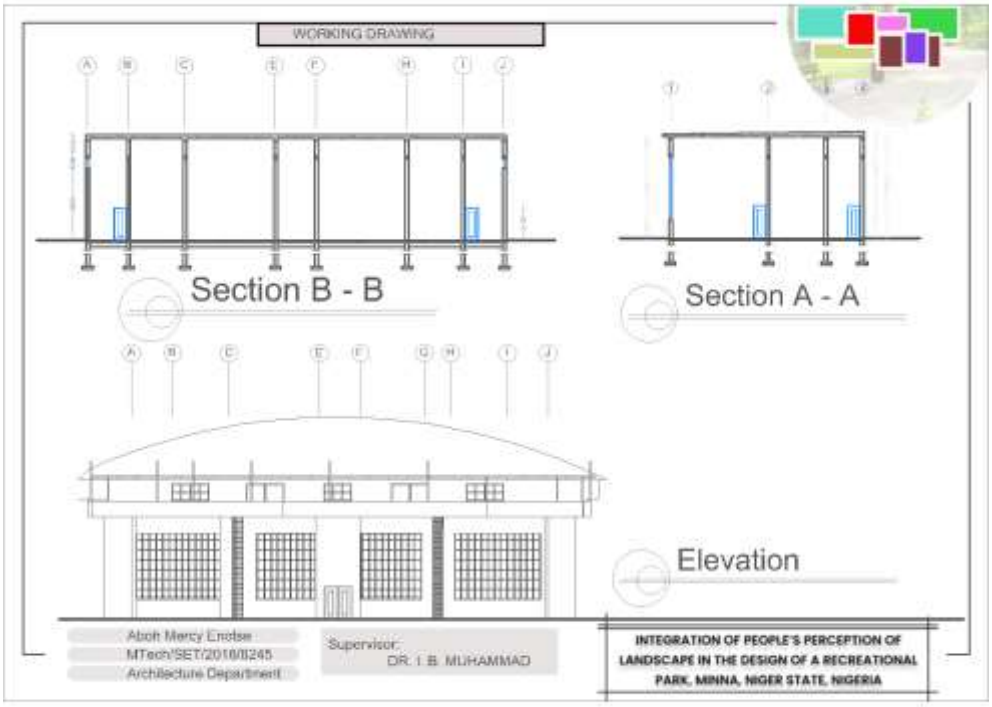
Appendix S: Structural System 2



Appendix T: Working Drawing Floor Plan

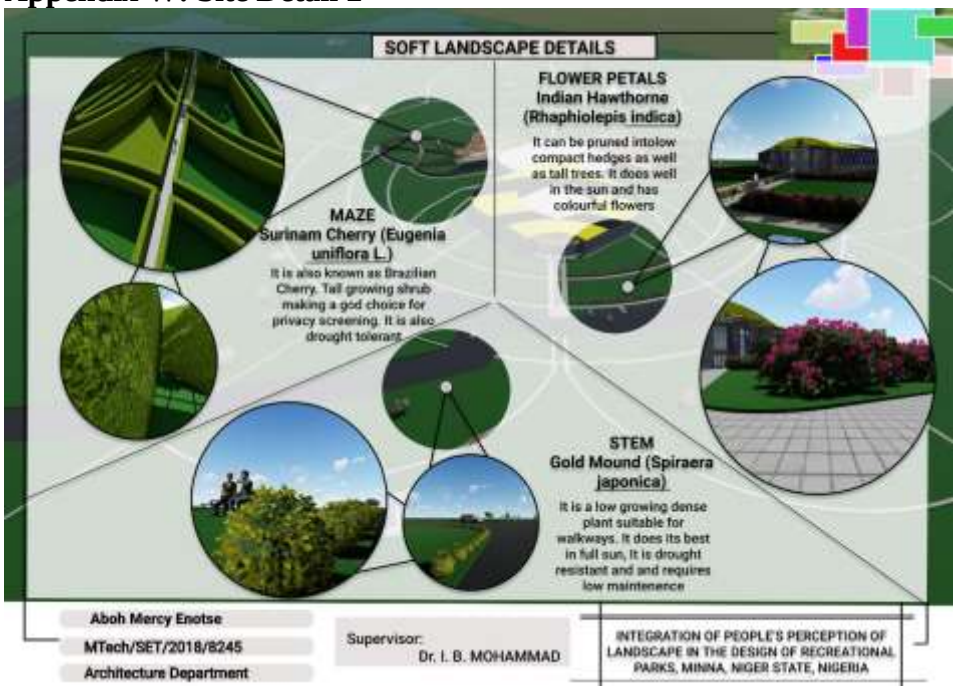


Appendix U: Working Drawing Sections and Elevation

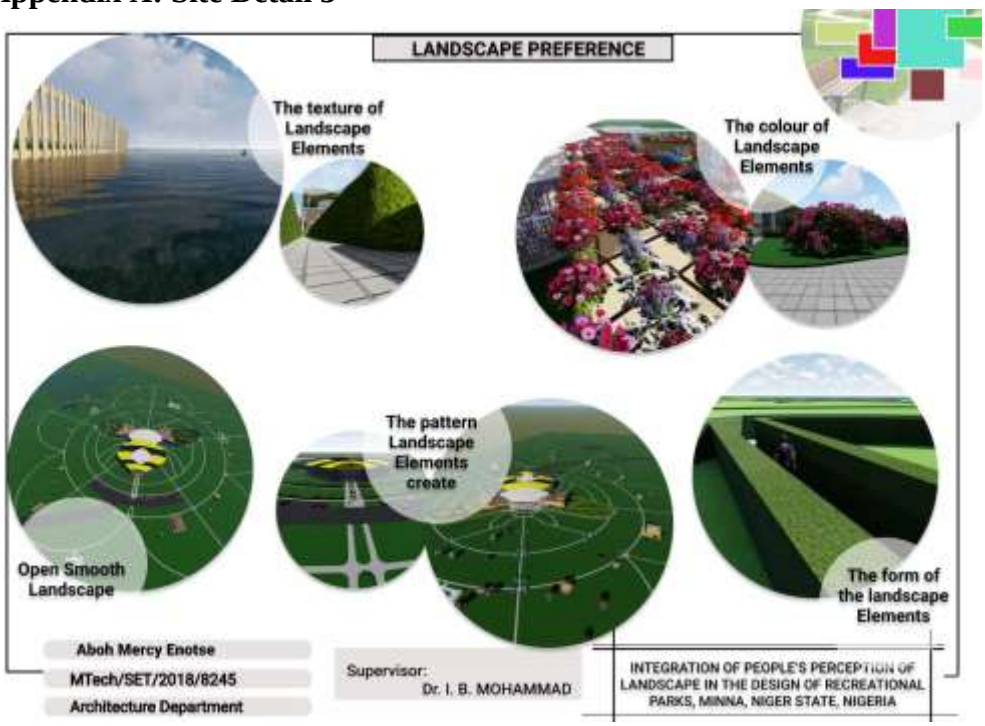


Appendix V: Site Detail 1

Appendix W: Site Detail 2



Appendix X: Site Detail 3



Appendix Y: Site Detail 4