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Integration of People's Perception of Landscape in the Design of Recreational Parks, Minna, Nigeria

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Abstract:

Recreation encompasses multidimensional activities that contain the exercises of physical, cognitive, emotional and social interaction. Studies have shown that people in Minna face many problems in outdoor recreational areas, including recreational parks. 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. The research method adopted by this study is quantitative in nature in which data obtained from the distributed of questionnaires were analysed. The parameters measured in this study included six perceptual categories (vegetation, open smooth, open coarse, rivers, agrarian, and structures) and the allocentric and autocentric perception modes. 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. Thus, the probability sampling technique was adopted as the sample technique for this study. It was discovered that the most desired landscape settings were structures, open smooth landscapes and water bodies and a statistical relationship exists between gender and the perception of these settings. Thus, it is recommended that recreational park designs should take into account not only the spacial qualities of landscape settings but also perceptual qualities so as to optimize the experience of people visiting recreational parks.

Keywords: Recreation, Landscape, Perception, Recreational Park

BACKGROUND

A vital component of any residential neighbourhood or community is the space that is dedicated and devoted to satisfying active and passive recreational needs (Olaleye, 2014). As such, recreation comprises multifaceted activities that involve the exercises of physical, cognitive, emotional and social interaction (Broadhurst, 2001).

Typically, society suggests that recreation takes place during "leisure time", it is therefore closely associated with the concept of leisure (Hailegiorgis, 2017). Recreational parks are places of great ecological, social and environmental importance. Thus, according to Recreational Park Landscape (2019), the existence of recreational spaces and gardens in various communities help to meet very necessary social and recreational needs. Hailegiorgis (2017) further explained that for a society as a whole, leisure provides an ideal medium for the transmission of historical, social and cultural values that promote desired norms, social orientations, and customs.

The benefits of recreational parks in communities extends towards accounting for the well-being of people. In an investigation carried out on the effect of recreational park visits on park goers, a significant correlation was discovered between the use of the parks and the observed state of health of people, hence people who used local parks frequently were more likely to report good health than those who do not (Godbey et al., 1992). Therefore, recreational parks are known to be of numerous benefits to both individuals and communities.

In a study done by AbdRazack et al. (2013), to assess the behaviour and preferences of Minna city dwellers to outdoor recreation, it was revealed that majority of the respondents (92.4%) indicated that they faced many different problems in outdoor recreational areas. It was thereby recommended to understand the problems in existing outdoor recreational areas in Minna, from people's point of view.

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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.

According to Public Participation (2008), the American Society of Landscape Architects advocate that an open, participatory design process can create better communities and a healthier environment. Thus, public involvement will help identify the issues important to the community and develop the most appropriate planning, design, and management solutions. The scope of this research covers the area of Minna, located in Niger state, for recreational parks to be specific.

This research seeks to contribute to the body of knowledge in research by exploring and highlighting the various ways in which the views of people can be applied in the design of recreational parks in Minna, Niger state, Nigeria.

The Concept of Perception

Perception is described as the way of recognizing and interpreting information gathered by the human senses (Essays, 2017). 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 conducted on Situated Cognition and the Phenomenology of Place, Seamon (2015) explained that in a typical lifeworld, the qualities of materiality, spatiality, and place directly resonate with humans and, though usually done subconsciously, prompts immediate actions and meanings. Therefore, perception is derived from the subconscious value given by people about the qualities of materiality, spatiality and place. Hence, Schachtel (1959) postulated that there are two basic modes of perception; the autocentric and allocentric perception modes.

Autocentric Perception Mode

Autocentric perception is describes by Porteous (1996) to be subject centred involving sensory quality and pleasure. Schachtel (1959) further explained that autocentric perception is described by how the subject or perceiver feels as such, objectification is fairly employed in the autocentric perception mode. Thus, the perceiver momentarily reacts to the object and considers it pleasurable or not pleasurable rather than being in engagement with the object. This phenomenon is similar to the concept of internalism. Internalism, as highlighted by Démuth (2016) suggests an explanation for the existence of intuitive and innate cognition. Thus, internalist propose that within an individual lies the source of knowledge and not from the external environment (Démuth, 2016). Autocentric perception is thereby characterized to be of lower senses such as taste, smell, touch, pain and proprioception. Vision, excluding the perception of colour is associated with autocentric perception (Porteous, 1996).

Allocentric Perception Mode

Allocentric perception on the other hand is object centred involving attention and directionality (Porteous, 1996). Here also, an approach likened to allocentric perception is considered. The externalism approach gives account to the derivation of knowledge and perception. In this approach, externalists assert that the mind (tabula rasa) can be compared to a blank sheet of paper in which concepts are imprinted on (Démuth, 2013). Thus, all knowledge is imprinted on the mind from an external reality. Schachtel (1959) explained that allocentric perception is characterized by higher senses like sight and hearing. All types of sound, except speech sound is considered allocentric (Porteous, 1996).

In a different light, Schachtel, (1959) discussed that for 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.

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Necka (2011) further concluded that nature is more prone to be perceived in the light of allocentric perception mode than in the autocentric perception mode.

Human Perception of Landscape

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 were on the high side. Generally, this yielded the six perceptual categories; vegetation, open smooth, open coarse, rivers, agrarian, and structures. Priego, Breuste and Rojas (2008) also conducted a study on the perception use and behaviour of people from Chile, Germany and Spain in various urban landscapes, it was concluded that people perceive urban landscape differently. 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.

Perception of any given environment helps one to understand and react to their environment.

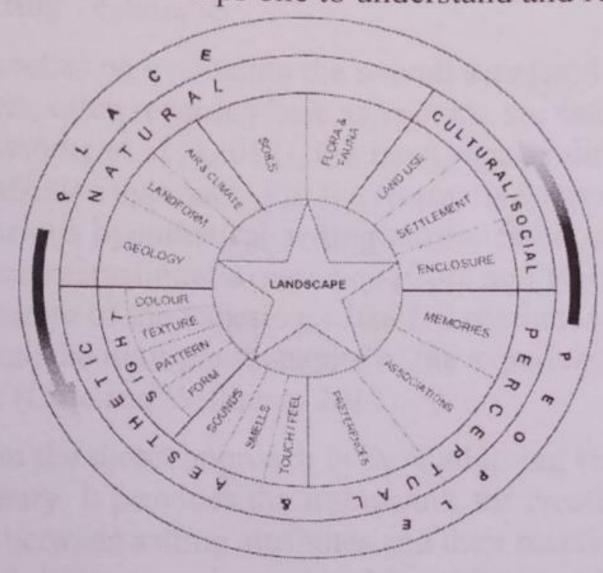


Figure 1: Factors and Components Influencing Landscape Character Source: (Swanwick, 2002).

As highlighted by Zube et al. (1982), the perception of landscape is as a result of the interaction between humans and landscape features. Swanwick (2002) further explained that the character of landscape is derived from the manner in which various components of our environment - both natural and cultural land use relate with one another and are perceived by people. Thus, the figure below shows a pictorial representation of the factors and components that determine the landscape character of a place.

As highlighted by Swanwick (2002), landscape is derived from the manner in which various components of our environment - both natural and cultural land use relate with one another and are perceived by people. Hence, the components highlighted in figure 1 influence the landscape character of a place and consequently, what is experienced and perceived by people.

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 the environment in which they find themselves. Since recreation experience is acknowledged to be complex, recreation research and management have a goal-directed approach in which recreational activities and settings are

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considered substitutable (Pietila and Kangas, 2015). Thus, recreational activities depend on the landscape settings. According to McCool (2006), landscape settings are places that contain natural or cultural heritage desired by visitors that are subject to biophysical impact like erosion which can be managed for visitors' experience. Therefore, to optimize recreational park visits, there is the need to examine the relationship between landscape settings and people's experience.

Methodological Approach to Examine the Relationship between Setting and Experience Various methodological approaches have been employed to examine the relationship between setting and experience. These approaches are the direct and indirect approaches. The direct approach allows respondents to answer about their perception of multiple factors that are assumed to affect experience, while with indirect approach, secondary measurements form the basis for statistical analyses that examines the setting-experience relationship (Pietila and Kangas, 2015). Pietila and Kangas (2015) explained 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 evaluating the overall satisfaction of visitors by evaluating how recreational park goers, often regarded here as visitors, are satisfied with multiple setting factors. According to Newsome et al., (2012), the most regular direct approach in recreation research has been the satisfaction approach. For the Normative approach, respondents evaluate the extent, considering various hypothetical setting attributes, to which these settings add or detract having an optimized 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 (Cole and Williams, 2012).

Last to be considered from the direct approach is the Laddering technique. This technique is based on a Means-end theory. It provides the framework for creating a means-end chain that describes the relationship between setting attributes and their reaction from the recreationist or visitors. It is implemented using a semi-structured interview 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, aiming to discover the personal values and views of the respondents (Pietila and Kangas, 2015).

However, Pietila and Kangas (2015) highlighted that the indirect approach involves the use of statistical analysis to determine the relationship between recreational experience and settings. For the indirect approach, recreational experiences are first operationalized and measured using a Recreation Experience Preference (REP) scale to determine the various recreation experience domains such as physical rest or privacy (Driver, 1983). With the REP score, the Recreation Opportunity Spectrum (ROS) which is regarded as the respondents' preferences, is then used to represent the settings 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).

All the approaches mentioned above have short-comings while capturing the relationship between setting and experience (Pietila and Kangas, 2015). The direct approaches are flawed because of the lack of the inclusion of spatial dimensions, as tourist's destinations like national parks are internally a heterogeneous 'space-time mosaics' (Saarinen, 2004). Pietila and Kangas, (2015) asserted that although the indirect approach consider spatial aspects, conclusions have

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not been yielded, thus researchers are employed to explore approaches that account for the spatial and social components of the setting-experience relationship.

In recent times, the linking of social dimensions to the concept of space is becoming prominent and with conceptual thoughts from study done by Manzo (2008), spaces known to be regarded as geographical areas as having just physical attributes have evolved to the term 'place'. Place is thus known to include people's meanings, values and experiences. The concept of place functions as a link between social experiences and geographical areas and aids in understanding the diversity of the meaning people attach to land and resources they manage (Galliano and Loeffler, 1999). Therefore, in assessing people's experience, one must consider the concept of place as a function of both a geographical location and people's perception of the space. This can be done adopting the laddering approach, aiming to investigate people's perception of landscape, postulates that respondents share opinions about landscape attributes and settings in an unstructured manner.

METHODOLOGY

The research method adopted by this study is the mixed research method which comprises of both the quantitative and qualitative research methods. The sampling method used to investigate landscape perception is the Laddering technique. The Laddering technique, as described by Gutman, (1982), is implemented by employing unstructured questionnaires to gain insights about perceptions of landscape attributes and settings. Thus, the sampling technique adopted by this study is the probability sampling technique whereby the sample was selected at random from the study area, Minna.

The parameters analysed in this study were obtained earlier from a study done by Herzog et al. (2000). Thus, the parameter obtained were cross-tabulated with the social-group factors highlighted by Matijosaitiene (2011). Other parameters measured were the perception modes postulated by Schachtel (1959). The variable analysed were obtained from the landscape perceptual qualities asserted by Swanwick (2002), these include form, texture, pattern, colour smell and sound. Thus, the cross-tabulation analysis and the Pearson's chi-square test were used to examine the relationship between the preferences for landscape settings, landscape perceptual qualities and social group factors. Hence, a survey was conducted to obtain the primary data analysed. The research instrument employed was the questionnaire, where by 352 responses were received from the 500 questionnaires distributed to residents of Minna.

Data collected were therefore analysed using the SPSS statistical analytic tool. Hence, the results from the analyses were obtained and represented in charts and tables.

RESULTS AND FINDINGS

The preferences for landscape settings were first analysed to determine the most desired in recreational parks. Below shows that from the landscape settings highlighted by Herzog et al. (2000), the preference for structures, open smooth landscape and waterbodies had the highest percentages.

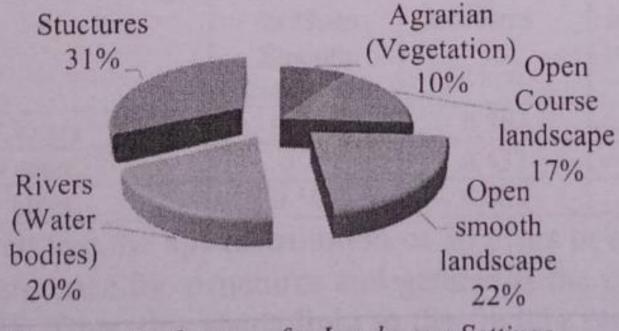


Figure 2: Preferences for Landscape Settings

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The three preferences for landscape settings with the highest percentages were thus accentuated and analysed with the socio-cultural factors gender, age and ethnicity to understand the relationship between these variables. Therefore, to examine the relationship between age and the preferences for landscape settings, the preferences for landscape settings were cross-tabulated with age distributions for both genders. Below shows the result of the analysis.

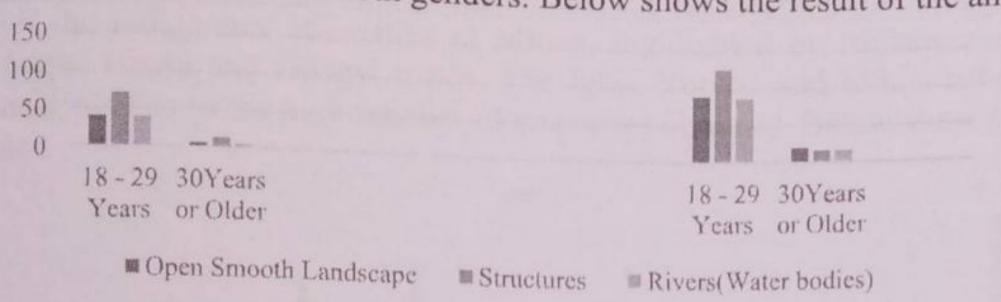


Figure 3: Cross-Tabulation between Age Distribution and Preferences for Landscape Settings for both Genders

Figure 3 shows the result of the cross tabulation between age distributions and the preferences for landscape settings for both genders. To compare the data for both genders, the results gotten are placed side by side, on the right is result gotten for male gender while on the left is for the female gender. A similarity was observed between the age distribution of 18-29 years for both genders regarding the preferences for the landscape settings. On the other hand, the male gender of the age distribution; 30 or older is observed to have a higher preference for open smooth landscape than structures or water bodies. This could suggest the need for the male gender beyond the ages of 30 who have spent time in the urban world, to seek tranquillity from open smooth landscapes. According to World Bank (2015), men are more likely to be active in formal occupations in the urban world than women. This supports 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 open smooth landscapes as an escape from the urban environment. To further investigate the relationship between landscape preferences and gender across the age distributions, the Pearson's chi-square test was conducted. Statistic Solutions (2020), asserted that Chi Square tests are usually employed when testing the relationship between various categorical variables. Thus, according to Statistic Solutions (2020), the Chi Square statistic is expressed numerically:

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

- Where, x^2 represents the p-value of the chi square statistics.
- O represents the observed frequency (the number of counts).
- E represents the Expected frequency if no relationship existed between the variables. The p-value shows the relationship between variables, thus if results in any number less than

0.05, it can be concluded that the variables analysed are dependent (Statistic Solutions, 2020).

Table 1: Statistical Relationship between Preference for Landscape Settings and Gender as Regards Age

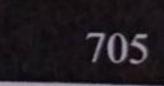
| | P-value for Open Smooth Landscape | P-value for structures | P-value for water bodies |
|-------------|-----------------------------------|------------------------|--------------------------------|
| 10-17 Years | 0.576 | 0.361 | 0.171 |
| 18-29 years | 0.27 | 0.437 | 0.517 |
| 30 or older | 0.508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

From Table 1, it was observed that the age distribution of 30 years or older shows a statistical relationship between the preference for structures and gender as the p-value yielded a figure 0.002 which is less than 0.05. Thus, this sheds light to the finding made in figure 3 where a

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strong contrast is seen in the preference for structures in recreational parks, between the male and female gender. No statistical relationship was seen between gender and the preference for open smooth landscape and water bodies for ages 30 or older.

The perceptual qualities highlighted in figure 1 by Swanwick (2002) were cross tabulated with the social group factors; Ethnicity and gender. Thus, the landscape preferences were cross-tabulated with the indigenous ethnicities in Minna, highlighted by Muhammad (2012) to include the Nupe, Hausa and Gbagyi tribes. The Igbo, Yoruba and Idoma tribe were also selected for analysis due to the high number of responses obtained. Below showing the result of the analysis.

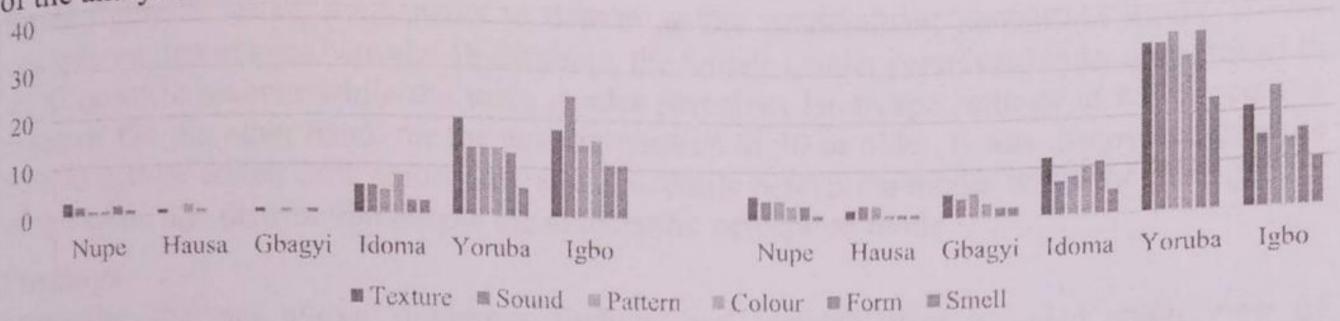


Figure 4: Cross-Tabulation between Ethnicities and Landscape Perceptual Qualities for both Genders

Figure 4 expresses the relationship between landscape perceptual qualities and selected ethnicities. On the left is the result for the female gender while on the right, for the male gender. To determine the perception mode adopted by each tribe, the first three perceptual qualities with the highest frequencies were selected and categorized according to the perception mode each quality belonged to. According to Van den Berg (2016), frequencies are used to summarize variables that are categorical in nature. Therefore, frequencies were used to determine the predominant perception mode adopted. For the female gender of the Nupe tribe, texture, form and sound had the highest frequencies, and hence the human senses responsible are touch, vision and hearing. Thus, the predominant perception mode adopted by the female gender of the Nupe tribe was discovered to be the autocentric perception mode. This examination was done for all the ethnicities considered and below shows the predominant perception mode adopted by each ethnicity.

| Ethnicity | Perception Mode Adopted by the Male Gender | Perception Mode Adopted by the Female Gender |
|-----------|--|--|
| Nupe | Autocentricity | Autocentricity |
| Gbagyi | Autocentricity | Autocentricity |
| Hausa | Autocentricity | Autocentricity |
| Yoruba | Allocentricity and Autocentricity | Autocentricity |
| Idoma | Autocentricity | Allocentricity |
| Igbo | Autocentricity | Allocentricity |

Another cross-tabulation analysis was carried out between age distributions and the landscape perceptual qualities for both genders and the chart below shows the relationship between landscape perceptual qualities and the various age distributions. On the left is the result for the female gender, while on the right is the result for the male gender.

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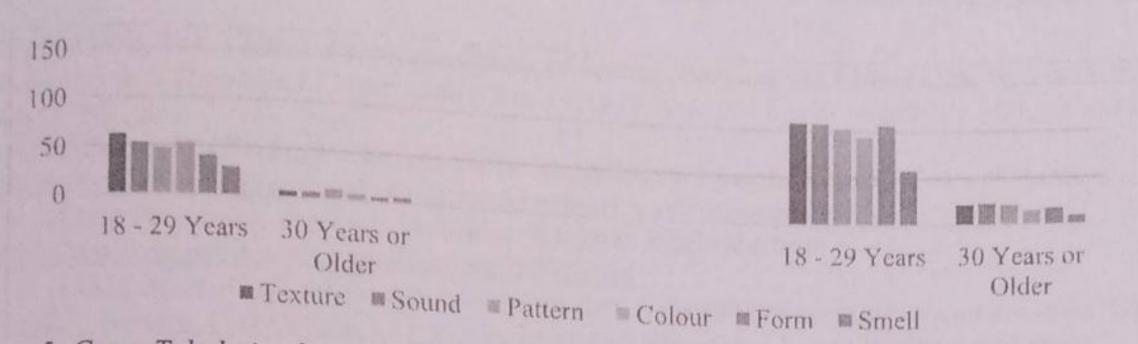


Figure 5: Cross-Tabulation between Ethnicities and Landscape Perceptual Qualities for both Genders

From figure 5, using frequencies to determine the predominant perception mode, it was discovered that of ages between 18-29 years, the female gender perceives landscape settings in an allocentric manner while the male gender perceives landscape settings in an autocentric manner. On the other hand, for the age distribution of 30 or older, it was discovered that the female gender adopts both autocentric and allocentric perception modes while the male gender of the same age distribution adopts the autocentric perception mode.

Findings

From the analyses above, numerous findings and insights were revealed about view of landscape-settings and also the landscape perceptual qualities for recreational parks design. Having put into considerations the special qualities of the landscape settings relating with perceptual qualities, it was discovered that the basic perception modes were predominantly adopted by various social group factors like ethnicity and age distribution. Thus, it was realized that for both genders, all three indigenous tribes in Minna; the Nupe, Hausa and Gbagyi tribes adopt the autocentric perception mode for landscape settings. The Igbo and Idoma tribe both adopt the allocentric perception mode while the Yoruba tribe perceive landscape setting through autocentricity and allocentricity. It was discovered that socio-cultural factor like gender have an influence on the perception of landscape settings.

CONCLUSIONS

Due to the psychological satisfaction natural landscape features give users, recreational park designs should be optimized taking into account the physical and perceptual attributes of landscape settings. The merging of the spacial qualities of landscape settings with perceptual qualities should be of paramount importance to recreational park managers, as it gives insights into the various ways recreational experience can be improved. Thus, for recreational park designs and managements in Minna, it should be ensured that landscape settings like structures, open smooth landscape and rivers are incorporated to suit the needs of residents. It is recommended that the landscape perceptual qualities like texture, pattern, colour, sound and form should be emphasised in landscape settings so as to optimize people's recreational experience in recreational parks in Minna, Niger State.

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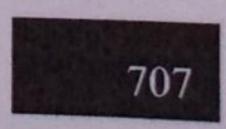
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