IJESDS Vol: 1(2): 348-362, 2026
https://doi.org/10.68086/RJOM1368

https://ijesds.org

International Journal of Environmental Sciences, Development & Sustainability
An official publication of the
Faculty of Environmental Sciences
Open Access | Peer-reviewed | International
ISSN (Online): 3156-4461

RESEARCH ARTICLE

Play Deserts in the Planned City: Public–Private Inequalities in School Recreational Provision in Urban Nigeria

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ABSTRACT

This paper examines how play deserts are produced within primary schools in Federal Housing Layout, Owerri, Nigeria, despite the area's planned residential status. Using a convergent mixed-methods case-study design, data were collected from seven primary schools through 365 pupil questionnaires, of which 350 were validly retrieved (95.9% response rate), semi-structured interviews with 30 teachers and administrators, and direct observation of recreational spaces. Data were analysed using frequencies, percentages, cross-tabulations, chi-square tests and thematic interpretation. Results show that recreational provision was largely nominal: six schools (85.7%) had open playgrounds, but these were mostly bare and poorly equipped; only four schools (57.1%) had structured play equipment, while disability-inclusive facilities were absent. School type significantly influenced facility availability ($\chi^2 = 5.83$, $p = .016$), condition ($\chi^2 = 6.71$, $p = .035$) and accessibility ($\chi^2 = 14.28$, $p = .001$). Pupils preferred larger playgrounds (36.9%), modern play equipment (31.7%) and sports courts (23.4%), with gender significantly shaping preferences and safety perceptions. The paper argues that play deserts result from weak planning enforcement, poor maintenance, restricted access, and inadequate child-centred design.

Keywords: *Recreational Accessibility; Playground Adequacy; Facility Functionality; Space Inequality; Inclusive Environments; Child-Centred*

1. INTRODUCTION

Urbanisation has become one of the defining planning challenges of the twenty-first century, but its benefits are unevenly distributed among children. Cities may expand housing, roads and schools, yet still fail to provide the everyday spaces through which children play, exercise, socialise and develop a sense of belonging. This is a serious planning concern because play is not a decorative addition to childhood; it is connected to children's rights, health, learning and social participation. Article 31 of the Convention on the Rights of the Child recognises the child's right to rest, leisure, play and recreational

activities (United Nations, 1989), while Sustainable Development Goal 11.7 calls for universal access to safe, inclusive and accessible green and public spaces, especially for children, women, older persons and persons with disabilities (United Nations, 2015).

The World Health Organization (2020, 2024) similarly links regular physical activity with children's physical fitness, motor development, cognitive outcomes and mental health. Yet in many rapidly urbanising African cities, the spaces that should support these outcomes are either absent, inaccessible, poorly equipped or unequally distributed. This problem is particularly urgent in Nigeria, where urban growth places increasing pressure on land, infrastructure and local service delivery (United Nations Department of Economic and Social Affairs, Population Division, 2025; World Bank, 2025). This paper frames such deprivation as the production of "play deserts": school and neighbourhood environments where children are formally located within an urban area but are deprived of safe, functional and developmentally appropriate recreational spaces.

Existing scholarship has established that recreational and green spaces are important public-health and environmental-justice assets. Wolch et al. (2014) show that urban green spaces support physical activity, psychological well-being and wider public health, but also warn that access to such spaces is often patterned by income, class and race. Rigolon's (2016) review similarly demonstrates that park access is marked by multiple dimensions of inequity, including differences in proximity, acreage, quality and safety. Beyond neighbourhood parks, school environments also matter. Dadvand et al. (2015) found that exposure to green spaces around schools was associated with improved cognitive development among primary schoolchildren, suggesting that children's daily learning environments are also health-supporting environments. UNICEF's child-responsive urban planning framework further argues that cities planned for children require safe public spaces, public amenities, proximity, walkability, participation and equitable access to services (UNICEF, 2018). Together, these studies show that recreational provision is not merely a question of amenity supply; it is linked to spatial justice, child development and the governance of urban land. They also suggest that the quality of children's environments should be assessed through the ordinary spaces of daily life, including school compounds, routes to school and the small open areas where play actually occurs.

Despite this growing literature, three gaps remain important. First, much of the evidence on green and recreational space inequality focuses on public parks, citywide open spaces or neighbourhood-level green infrastructure, while school-based recreational provision receives less attention as a distinct unit of urban spatial inequality. Second, studies often measure access in terms of distance or quantity, with less attention to the everyday functionality of recreational spaces: whether facilities are usable, safe, age-appropriate, inclusive and adequate for pupils' needs. Third, evidence from rapidly urbanising secondary cities in sub-Saharan Africa remains limited, especially where planned residential layouts are assumed to provide better social infrastructure than informal or unplanned settlements. This assumption requires interrogation. A planned neighbourhood may contain schools, roads and housing plots, yet still produce child-unfriendly environments if school grounds are overcrowded, recreational spaces are converted to other uses, or public and private schools experience different levels of investment. The concept of play deserts therefore extends the debate beyond the presence or absence of parks to the unequal conditions under which children encounter play within the ordinary geography of schooling.

This article examines public–private inequalities in school recreational provision in Federal Housing Layout, Owerri, Nigeria, by focusing on the types, accessibility, condition, adequacy, and functionality of recreational facilities in primary schools. It argues that play deserts can emerge even within a planned urban layout when land-use pressure, weak infrastructure investment, and uneven school resources combine to limit children's access to safe and usable play spaces. The article further argues that public–private differences in school recreation are not linear. Public schools may possess larger land areas but

lack functional equipment and maintenance, while private schools may provide selected play structures but operate within constrained compounds. These differences produce a layered form of recreational inequality in which children's opportunities for active play depend not only on the existence of schools, but on the quality, usability and governance of the spaces attached to them. In this sense, school recreation becomes a useful lens for understanding how urban inequality is reproduced at a small but highly consequential scale.

The contribution of this paper is threefold. Conceptually, it advances the idea of play deserts as a way of analysing children's recreational deprivation within planned urban environments. This concept helps connect child-friendly urbanism with spatial justice by showing that the absence of usable play spaces is not accidental but produced through decisions about land, infrastructure, school investment and maintenance. Empirically, the article contributes evidence from a rapidly urbanising Nigerian city, thereby extending debates on recreational equity beyond the large metropolitan and Global North settings that dominate much of the literature. Practically, the article speaks to urban planners, education authorities, school proprietors and local governments by showing that school recreational facilities should be treated as core social infrastructure rather than optional extras. This is important because schools are among the most regular urban institutions in children's lives; when they lack functional recreational space, the consequences extend beyond school management to public health, educational equity and neighbourhood liveability. If cities are to meet the promise of SDG 11 and child-responsive planning, recreational spaces must be planned, protected and maintained where children spend much of their daily lives. Addressing play deserts in primary schools is therefore not only a matter of improving school compounds; it is a necessary step toward healthier, fairer and more child-friendly urban development.

2. LITERATURE REVIEW

Children's recreational deprivation should be understood as a spatial justice problem rather than simply as a shortage of playground equipment. Current urban-health literature treats regular physical activity and access to supportive environments as central to children's well-being, with the World Health Organization (2020) emphasising the developmental importance of reducing sedentary behaviour among children and adolescents. Similarly, Jabbar et al. (2022) show that urban green spaces support well-being through physical, psychological, social and environmental pathways. These studies indicate that playgrounds, open fields and school recreational spaces function as social infrastructure, not optional additions to education. Where children attend schools without safe, functional and inclusive play spaces, they experience a form of everyday spatial exclusion. This literature therefore supports the paper's conceptual claim that "play deserts" are produced when children are located within the planned city but denied meaningful play opportunities.

The play-deserts concept extends green-space inequality debates by shifting attention from neighbourhood parks to the everyday geography of schooling. Baró et al. (2021) demonstrate that school greening can become a privilege rather than a right when nature within and around primary schools is unequally distributed. Boeing et al (2022) further argue that access to urban green space cannot be captured through one indicator alone because proximity, quality, per-capita availability and population pressure reveal different inequality patterns. This matters because a school may appear to possess recreational space while pupils experience it as unusable, unsafe, overcrowded or poorly maintained. The conceptual contribution of this paper is therefore to treat school recreation as a multidimensional equity issue involving availability, accessibility, adequacy, condition and functionality. The Play Deserts Production Model in Figure 1 translates this argument into an analytical framework.

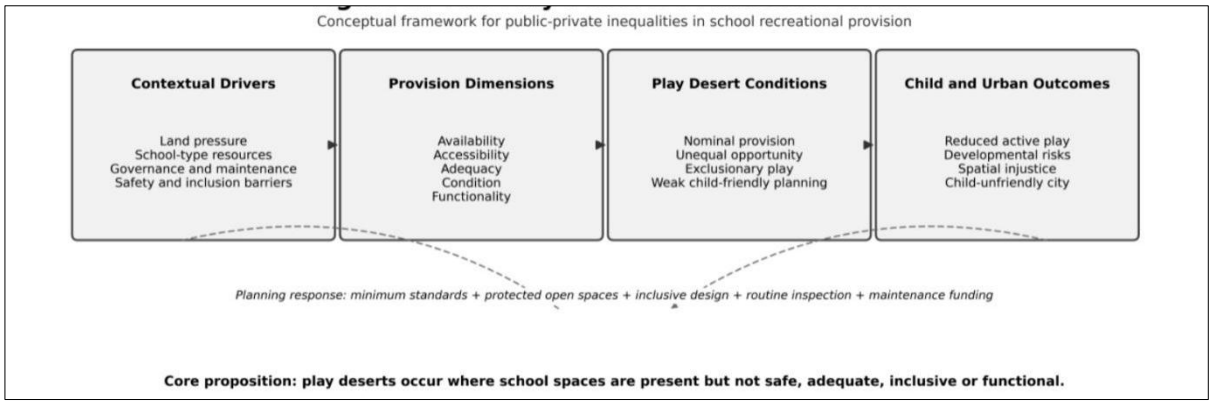

Figure 1. Conceptual framework: The Play Deserts Production Model.

Figure 1 conceptualises play deserts as the outcome of intersecting contextual drivers, provision dimensions and lived conditions of exclusion. Urban land pressure, school-type inequality and governance deficits shape whether facilities are available, accessible, adequate, functional and maintained. When these dimensions are weak, schools may produce nominal provision, unequal recreational opportunity and exclusionary play environments. The framework also recognises that the outcomes are both developmental and spatial: children may lose opportunities for physical activity, social interaction and emotional release, while the city reproduces recreational injustice within ordinary school environments. The feedback loop in the model indicates that planning standards, maintenance funding, inclusive design and protected open space can interrupt this process.

Empirical contribution: Public-private inequalities in planned African urban contexts

The empirical value of this study lies in its focus on school recreational inequality in a rapidly urbanising African city, a context still underrepresented in mainstream recreational-equity research. Much of the current literature on urban green-space access is generated from large metropolitan settings with stronger spatial-data systems, while African secondary cities are often discussed mainly through broad narratives of informality and service deficits. UN-Habitat (2022) shows that urban plans across Africa frequently recognise spatial growth, but implementation is weakened by poor alignment between planning boundaries, financing, and delivery. This evidence is important because it challenges the assumption that planned layouts automatically produce equitable urban outcomes. A formally planned neighbourhood can still become child-unfriendly where school land is converted, play spaces are neglected, or public and private schools receive unequal investment. This study therefore contributes empirical evidence on how play deserts may emerge inside planned residential environments.

Public-private comparison provides a useful lens for analysing the unequal production of school recreational opportunity. Boeing et al. (2022) argue that healthy and sustainable cities require fine-grained indicators capable of revealing within-city inequalities rather than only citywide averages. This principle is relevant to school recreation because children's access to play may differ significantly between neighbouring institutions. Public schools may have larger compounds but weak equipment and maintenance systems, while private schools may possess selected play structures but operate within constrained plots. The issue is therefore not simply whether a school is public or private, but how school type intersects with land, funding, maintenance and management capacity. By examining these layered differences, the study contributes to a more nuanced empirical understanding of educational infrastructure inequality in urban Nigeria.

Practical contribution: School recreation as social infrastructure and governance concern

The practical contribution of the paper is that it treats school recreational facilities as social infrastructure requiring deliberate planning, maintenance, and institutional accountability. Recent research on schoolyards shows that these spaces can support

wider urban resilience when they are designed as multifunctional environments rather than neglected institutional leftovers. Flax et al. (2020) argue that greening schoolyards can contribute to climate adaptation, social learning, and urban resilience. This suggests that school compounds should be understood as part of the city's public-health and environmental infrastructure, especially in dense urban areas where children's access to public parks may be limited. For Nigerian cities, this means recreational provision should be embedded in school approval, land-use control, development standards, and maintenance budgets. The practical link is clear: without governance, recreational spaces become symbolic assets rather than usable infrastructure.

Quality and functionality are central to this governance argument because the presence of facilities does not guarantee meaningful play. Rigolon (2016) shows that the health-promoting potential of parks depends on the diversity and quality of elements available for physical, social, cultural, and environmental activities. Applied to school recreation, this means that broken swings, bare fields, unsafe surfaces, poor supervision and inaccessible equipment should be treated as evidence of infrastructural failure, not minor defects. The literature therefore supports a shift from counting facilities to assessing whether they are safe, adequate, inclusive and fit for purpose. This is where the study's practical contribution becomes strongest: it offers planners, education authorities and school managers a framework for identifying play deserts and prioritising interventions.

The literature ultimately points to the need for coordinated planning frameworks linking schools, local authorities, communities and regulatory agencies. WHO (2020) emphasises the importance of enabling environments for physical activity, while UN-Habitat (2022) frames inclusive, sustainable urban development as dependent on accessible services and well-managed urban spaces. These positions imply that recreational planning cannot be left to individual schools alone, especially where funding capacity differs sharply between public and private institutions. Minimum standards, routine inspections, maintenance funding, inclusive design and protection of school open spaces are necessary to prevent recreational deprivation. In this sense, addressing play deserts is not only a school-management issue but also a wider urban-planning responsibility. The present study therefore links conceptual innovation, empirical evidence and practical governance by showing how planned cities can still fail children when school recreation is inadequately protected and managed.

3. MATERIALS AND METHODS

This study adopted a convergent mixed-methods case-study design to examine public–private inequalities in school recreational provision in Federal Housing Layout, Owerri, Nigeria. The design was selected because the study required both measurable evidence of inequality and contextual explanation of how such inequality is produced within school environments. Quantitative data were needed to compare pupils' reported access, preferences, and facility use across school types, while qualitative and observational data were needed to explain the institutional, spatial, and maintenance conditions behind those patterns. A convergent mixed-methods design allows quantitative and qualitative data to be collected within the same study, analysed separately, and then integrated to produce a more complete interpretation of the research problem (Creswell & Plano Clark, 2018; Fetters et al., 2013).

The case-study approach was appropriate because the study did not seek to generalise statistically to all Nigerian cities, but to generate an analytically rich understanding of how "play deserts" can emerge within a planned urban neighbourhood. Federal Housing Layout was treated as a critical case because it is formally planned, yet exposed to rapid urbanisation, school expansion, land-use pressure and unequal public–private infrastructure provision. This made it suitable for examining whether planned residential layouts necessarily provide child-friendly recreational environments. The original thesis

employed a descriptive survey approach involving questionnaires, interviews and direct observation to assess recreational provision, use and management in schools. This article extends that methodological base by interpreting the evidence through the Play Deserts Production Model.

The study was conducted in Federal Housing Layout, Owerri, Imo State, Nigeria. The layout is a planned residential area that has experienced increasing development pressure, growth in school-age population, and competition between educational, residential, and commercial land uses. The study focused on seven primary schools located within the layout: one public school and six private schools. The school was the primary unit of analysis, while pupils, teachers, and administrators served as respondent groups. This school-level focus was necessary because school compounds are among the most regular environments through which children encounter play, physical activity, and peer interaction.

The public–private comparison was central to the study because school type can influence land availability, investment in play equipment, maintenance capacity, supervision arrangements and responsiveness to parental expectations. However, the study did not assume that private schools were automatically better or that public schools were automatically worse. Instead, it examined how different combinations of land, equipment, safety, accessibility and maintenance produced varying degrees of recreational advantage or deprivation.

The target population comprised pupils enrolled in the seven selected primary schools, together with teachers and administrators involved in school management. The total pupil population across the seven schools was 4,222, and 30 teachers and administrators were included to provide institutional perspectives on facility management, maintenance, and accessibility. A total of 365 questionnaires were administered to pupils, of which 350 were validly retrieved, giving a response rate of 95.9%.

Pupils were selected using stratified random sampling. Each school formed a stratum, and pupils were selected proportionally according to school enrolment size. This ensured that larger schools contributed more respondents while smaller schools were still represented. Stratification was appropriate because the study compared recreational experiences across different institutional contexts rather than treating pupils as a single homogeneous group. Teachers and administrators were selected purposively because they possessed role-specific knowledge about supervision, maintenance, funding, safety, and policy implementation. Purposive sampling is suitable where participants are selected because of their expertise or direct involvement in the phenomenon under investigation (Etikan et al., 2016).

Data were collected using three complementary instruments: a structured pupil questionnaire, semi-structured interviews, and direct observation. The questionnaire captured pupils' frequency of recreational facility use, preferred activities, perceived accessibility, satisfaction and views on adequacy. It used structured and Likert-scale items to allow statistical comparison across school type, gender and age. The questionnaire language was kept simple and age-appropriate to reflect the literacy level of primary school pupils.

Semi-structured interviews were conducted with 30 teachers and administrators. The interviews explored school policies on recreation, maintenance practices, supervision arrangements, funding constraints, safety concerns, accessibility challenges, and stakeholder involvement. Semi-structured interviews were appropriate because they allowed the researcher to use comparable guiding questions while also probing school-specific issues in greater depth (Kallio et al., 2016).

Direct observation was used to assess the physical condition and actual usability of recreational spaces. The researcher observed playgrounds, play equipment, open fields, and general recreational environments, focusing on equipment functionality, safety, maintenance, diversity of facilities, inclusive features, and evidence of pupil use. Observation was essential because self-reported access does not always reflect material conditions. For example, a school may report having

a playground, but observation may reveal that the playground is bare, unsafe, poorly maintained, or functionally inadequate. The thesis confirms that direct observation was used to assess physical condition, safety, usability and diversity of recreational facilities.

The study operationalised recreational inequality through five provision dimensions: availability, accessibility, adequacy, condition and functionality. Availability referred to whether a school had identifiable recreational facilities, such as playgrounds, play equipment, open fields, sports courts or shaded play areas. Accessibility referred to whether pupils could reasonably reach and use available facilities during school time. Adequacy captured whether the facilities were sufficient for the pupil population. Condition referred to the safety, maintenance and physical quality of facilities. Functionality assessed whether the facilities supported meaningful, regular and inclusive play.

These five dimensions were then interpreted through the broader concept of play deserts. A school was not considered recreationally adequate simply because it possessed open space or isolated equipment. Rather, recreational provision was judged in terms of whether the available spaces were safe, sufficient, inclusive, maintained and usable. This distinction between nominal provision and effective provision is central to the methodological contribution of the study.

Quantitative data were analysed using descriptive and inferential statistics. Frequencies, percentages, means and cross-tabulations were used to summarise patterns of facility use, recreational preferences, perceived accessibility and school-type differences. Chi-square tests were used to examine statistically significant associations between categorical variables, including school type and facility availability, school type and facility condition, gender and recreational preference, and other access-related variables. Statistical significance was set at $p < .05$, which is appropriate for testing associations between categorical variables in social and educational research (McHugh, 2013). The thesis confirms that descriptive statistics and chi-square tests were used to analyse patterns of facility usage, accessibility, preferences and school-type differences.

Qualitative interview data were analysed thematically. Responses were coded and grouped into themes relating to funding constraints, maintenance deficits, supervision practices, safety concerns, inclusive design, land pressure and institutional accountability. Thematic analysis was suitable because it enabled the study to identify recurring patterns in stakeholder accounts while linking those accounts to the conceptual framework (Braun & Clarke, 2021). Observational data were summarised descriptively and used as a validation layer. Integration occurred at the interpretation stage, where survey findings, interview themes and observational evidence were compared. This triangulation strengthened the credibility of the findings by showing whether pupils' reported experiences were consistent with staff accounts and observed facility conditions (Noble & Heale, 2019).

Ethical care was required because the study involved children. Questions were age-appropriate, participation was handled through school authority structures, and pupils were not exposed to sensitive or intrusive questioning. Confidentiality was maintained in reporting responses, particularly where findings revealed poor maintenance, unsafe facilities, or inadequate provision. Research involving children requires attention to protection, consent, power relations and the child's ability to participate safely and meaningfully (Alderson & Morrow, 2020).

Methodological rigour was strengthened through three strategies. First, proportional stratified sampling ensured fair pupil representation across schools. Second, the combination of questionnaires, interviews and observation enabled triangulation across respondent experience, institutional explanation and physical evidence. Third, the use of clearly defined provision dimensions reduced ambiguity in the interpretation of recreational inequality. These procedures allowed the study to move beyond a simple inventory of facilities and to explain how public–private school differences, maintenance systems, safety conditions and functional adequacy combine to produce play deserts in a planned Nigerian urban neighbourhood.

4. RESULTS AND DISCUSSION

The results are discussed through the paper's central proposition that recreational deprivation in a planned urban neighbourhood is produced not only by the absence of playgrounds, but by the failure of school recreational spaces to become safe, accessible, adequate, inclusive and functional. The discussion therefore integrates four forms of evidence: facility inventories, pupil survey responses, inferential tests, staff interviews and field observations. This integrated reading is important because the literature on child-friendly planning and urban green-space equity increasingly shows that the presence of open space alone is insufficient; quality, accessibility, safety, inclusion and governance determine whether such spaces actually support well-being (Baró et al., 2021; Rigolon, 2016; Wolch et al., 2014). The findings from Federal Housing Layout extend this debate to school-based recreation in a Nigerian planned neighbourhood, showing that formal planning does not automatically produce child-friendly school environments.

Table 1. Analytical structure of the results and discussion

Analytical thread	Evidence examined	Main empirical result	Literature engagement
Planned-city paradox and public-private inequality	Facility availability, school type, facility condition, interviews and observed school environments	Most schools had some form of recreational space, but provision was uneven, shallow and often poorly equipped.	Engages equity debates on school greening, park access and environmental justice by showing that land or open space does not guarantee recreational justice.
Children's recreational needs and inclusion gaps	Pupil preferences, frequency of use, safety perceptions, gendered differences, disability accessibility and observed participation	Children demanded larger, safer and more diverse play spaces; girls and children with disabilities faced additional barriers.	Extends child-responsive planning literature by foregrounding children as users whose needs are diverse, gendered and embodied.
Governance and sustainability of play infrastructure	Maintenance responsibility, community involvement, staff interviews and observed facility deterioration	Maintenance responsibility was fragmented, and stronger community involvement was associated with better facility condition.	Connects schoolyard and social-infrastructure literature to maintenance, community participation and institutional accountability.

Nominal provision and the planned-city paradox

The first major result is that recreational provision in the surveyed schools was more visible as nominal availability than as effective provision. Six of the seven schools had open playgrounds, four had swings and slides, three had shaded sitting areas, and two had garden or nature spaces. Sports equipment was reported in all schools, although the quality, quantity and usability of such equipment varied considerably. One school had no functional recreational facility. These results initially suggest that recreational provision exists across much of the study area; however, interview and observation evidence shows that much of the provision was thin, poorly equipped, or weakly integrated into everyday school life.

Table 2. Availability of recreational facilities in the surveyed schools

Facility type	Number of schools	Percentage
Open playgrounds	6	85.7%
Swings and slides	4	57.1%
Sports equipment	7	100.0%
Shaded sitting areas	3	42.9%
Garden/nature spaces	2	28.6%
No functional recreational facility	1	14.3%

Table 2 should not be read as evidence of satisfactory provision. Instead, it reveals why the concept of play deserts is necessary. In several schools, the so-called playground was a bare or sandy space where pupils played informally without safety surfacing, demarcation, age-appropriate play structures or adequate supervision. The head teacher of Unity Primary School captured this condition directly: *"Children play mostly on bare ground because the playground equipment provided years ago has broken down and has not been replaced" (Head teacher, Unity Primary School).*

A teacher at Scripture Union Academy expressed a similar concern: *"We have open space, but nothing to make playtime exciting; the children just run around" (Teacher, Scripture Union Academy).* These interview statements give substance to the facility inventory by showing that availability does not mean functionality. They also align with Baró et al. (2021), who argue that school greening and access to nature around primary schools should be treated through an equity lens rather than as a decorative privilege. In the same way, the present findings show that school recreation should not be reduced to the physical presence of a field. Effective provision requires safety, usability, maintenance, diversity, and inclusion. This also echoes Flax et al. (2020), who treat schoolyards as part of urban resilience, because school outdoor spaces can support health, social interaction and environmental quality only when they are intentionally designed and maintained. The Federal Housing Layout evidence therefore extends existing literature by demonstrating that planned urban form alone does not prevent recreational deprivation. The planned city may still contain play deserts where child recreation is not enforced as social infrastructure.

Public-private inequality as a spatial and institutional contradiction

The public-private pattern in the study was not a simple hierarchy of better private schools and worse public schools. Rather, it revealed a spatial and institutional contradiction. Unity Primary School, the only public school, had relatively larger land but lacked modern and functional recreational equipment. Several private schools had invested in small play structures or improvised recreational spaces, but were constrained by limited compound size. Field observations confirmed this contradiction: Unity Primary School had a large but uneven, dusty and bare field with no functional equipment; Great Scholars International Schools had an enclosed and well-kept but overcrowded play area; Christian International Primary School had swings and slides that were insufficient for its large pupil population; and God's Light Primary School creatively used painted game lines on the ground to support play within limited space. The statistical results confirm that these observed differences were patterned rather than incidental.

Table 3. Statistical evidence supporting the play-deserts argument

Tested relationship	chi-square	df	p-value	Decision	Analytical meaning
School type x facility availability	5.83	1	.016	Significant	Provision differs by school ownership.
School type x facility condition	6.71	2	.035	Significant	Public-private differences extend to quality and maintenance.
School type x accessibility	14.28	2	.001	Significant	Access to play is unevenly experienced by pupils.
Gender x preferred facility type	12.47	3	.006	Significant	Recreational needs are gendered and diverse.
Gender x perceived safety	7.56	2	.023	Significant	Safety concerns affect girls' participation.
Community involvement x facility condition	11.27	4	.024	Significant	Stakeholder involvement supports better facility condition.

Statistical significance assessed at $p < .05$.

School type was significantly associated with availability, condition, and accessibility. A teacher explained the institutional mechanism behind this pattern: *"Private schools depend on school fees, so they can buy things. Public schools depend on the government, and that help rarely comes" (Teacher, Federal Housing Layout).* This statement is analytically important because it links the quantitative school-type differences to the institutional financing of school space. It also resonates with Rigolon's (2016) review of inequity in urban park access, which shows that access inequalities are rarely about proximity alone; they are also about quality, safety, and the social distribution of well-maintained amenities. Similarly, Wolch et al. (2014) argue that urban green-

space justice requires attention to who benefits from environmental improvements and who remains underserved. The present study translates this environmental justice concern into the school compound. The public school had land but not investment; private schools had some investment but insufficient space. In both cases, children's recreational rights were compromised by the unequal alignment of land, finance, management, and maintenance.

Accessibility, use and the functionality of play spaces

The strongest statistical result concerned accessibility. Only 11.6% of public-school pupils reported that recreational facilities were easily accessible, compared with 38.8% of pupils in private schools. Conversely, 41.9% of public-school pupils reported that facilities were not accessible, compared with 15.6% in private schools. The relationship was significant, chi-square = 14.28, df = 2, p = .001.

Table 4. Accessibility of recreational facilities by school type

School type	Easily accessible	Partially accessible	Not accessible	Total
Public school	5 (11.6%)	20 (46.5%)	18 (41.9%)	43
Private schools	119 (38.8%)	140 (45.6%)	48 (15.6%)	307
Total	124 (35.4%)	160 (45.7%)	66 (18.9%)	350

Test result: chi-square = 14.28, df = 2, p = .001.

This result confirms that recreational inequality is experienced through everyday use, not only through school-level inventory. A playground that is locked, overcrowded, unsafe, poorly supervised, or lacking equipment does not constitute meaningful access. The usage data reinforce this interpretation: only 30.0% of pupils reported daily use of recreational facilities, while 40.0% used them weekly, 20.0% used them occasionally, and 10.0% rarely or never used them.

Table 5. Frequency of recreational facility use among pupils

Frequency of use	Number of pupils	Percentage
Daily	105	30.0%
Weekly	140	40.0%
Occasionally	70	20.0%
Rarely or never	35	10.0%
Total	350	100.0%

The interview and observation evidence explains why daily use was limited. Teachers reported that some equipment was kept away to prevent damage, some playgrounds were overcrowded during break, and supervision was difficult because teachers were simultaneously responsible for academic duties. One teacher at Ephphata Academy stated: *"Sometimes we can't watch all the children at once during break; the compound is small, and accidents happen" (Teacher, Ephphata Academy).* This finding connects directly to the health and well-being literature. WHO (2020) emphasises the importance of regular physical activity and reduced sedentary behaviour for children and adolescents, while Jabbar et al. (2022) show that green and recreational spaces contribute to well-being through physical, psychological and social pathways. Dadvand et al. (2015) also demonstrate the developmental relevance of green space exposure among primary schoolchildren. The present findings do not simply confirm that play spaces are beneficial; rather, they show that their benefits are weakened when access is irregular, restricted or unsafe. Therefore, the functionality of school recreation depends on routines, supervision and institutional permission as much as on the existence of space.

Children's preferences, gendered safety and exclusionary design

The pupils' preferences reveal a clear mismatch between existing provision and children's desired recreational environments. Larger playgrounds were preferred by 36.9% of pupils, modern play equipment by 31.7%, sports courts by 23.4% and creative or quiet play areas by 8.3%.

Table 6. Pupils' preferred recreational facilities

Preferred facility	Number of pupils	Percentage
Larger playgrounds	129	36.9%
Modern play equipment	111	31.7%
Sports courts	82	23.4%
Creative or quiet play areas	29	8.3%

These preferences are not minor descriptive details; they are child-centred evidence of inadequacy. Children were identifying specific deficits in space, equipment, structured sports opportunities and quieter forms of recreation. This is consistent with UNICEF's (2018) child-responsive urban planning framework, which emphasises that children should be recognised as users of urban space whose needs must inform planning decisions. The findings also extend the school greening argument of Baró et al. (2021) by showing that equity in school environments must include not only vegetation or greening, but also the diversity of recreational functions available to different groups of children.

Gendered results deepen this point. Boys showed stronger preference for larger playgrounds and sports courts, while girls showed greater preference for modern play equipment and creative spaces. The relationship between gender and preferred facility type was significant, chi-square = 12.47, p = .006. Safety perceptions were also gendered: girls reported greater concern about overcrowding, rough play, bullying, and lack of privacy, and the relationship between gender and perceived safety was significant, chi-square = 7.56, p = .023. Interview evidence gives life to this statistical result. A teacher observed: *"Girls sometimes stay aside when the boys play football because they don't want to get pushed or injured" (Teacher, Federal Housing Layout).* This statement shows that exclusion is not always produced by formal school rules. It may emerge from the design and organisation of space. Where the available play environment privileges football, running and rough competitive games, girls may be present in the playground but not equally able to use it with confidence. In this respect, the findings support Wolch et al.'s (2014) argument that environmental justice must consider the lived distribution of benefits, not simply the location of environmental amenities. Recreational spaces that appear open to all may still be socially unequal in practice.

The disability dimension is more consequential. No ramps, adaptive play equipment, or specialised play zones were observed across the surveyed schools. One private-school teacher reported that a pupil who used crutches could not join outdoor play: *"Because the field is rough and unsafe for him" (Teacher, private school).* This observation confirms that the play-desert condition includes exclusionary design. A recreational space that can be used only by able-bodied children is not fully child-friendly. The finding aligns with UNICEF's (2018) emphasis on inclusive and child-responsive planning, while also extending the paper's conceptual claim: play deserts are produced not only when facilities are absent, but also when existing spaces fail to recognise different bodies, abilities, safety needs and forms of play.

Governance, maintenance and the sustainability of recreational infrastructure

The final layer of the findings concerns governance. Public and private school staff differed significantly in their views of who should maintain recreational facilities. In the public school, staff largely placed responsibility on government, while private-school staff were more likely to identify school management as responsible. The relationship was significant, chi-square = 10.21, p = .006. This result indicates that maintenance is embedded in institutional funding models and accountability structures. Public schools depend more heavily on state support, while private schools are more directly pressured by management systems and parental expectations. In both contexts, however, recreational infrastructure remains vulnerable where there is no enforceable maintenance framework. Teachers across the schools repeatedly connected poor facility condition to funding limitations. One head teacher explained: *"Even when schools try to buy play equipment, they break quickly because of overuse, and repairs cost money that parents are not always willing to contribute" (Head teacher, Federal Housing Layout).*

Community involvement was also significantly associated with facility condition, chi-square = 11.27, p = .024. Schools with higher community participation had better-maintained recreational facilities, whereas schools with low community involvement showed greater signs of neglect, deterioration, and unsafe play areas. Interview evidence showed that Parent-Teacher Associations occasionally contributed funds to repair or purchase play items and that community members sometimes helped clear weeds or level grounds. However, such support was irregular and not embedded in a structured maintenance plan.

This governance finding is strongly supported by the literature. Flax et al. (2020) argue that greening schoolyards should be understood through an urban resilience perspective, meaning that outdoor school environments require long-term management, maintenance, and institutional commitment. UN-Habitat (2022) similarly emphasises that urban futures depend on inclusive and well-governed infrastructure systems. The present study brings these concerns to the scale of the school compound. It shows that recreational facilities deteriorate when responsibility is fragmented among government, school management, parents and communities. Building playgrounds without budgets, inspection systems, maintenance schedules and community accountability risks reproducing play deserts over time.

Integrated discussion: what the findings add to the literature

Overall, the findings demonstrate that play deserts in Federal Housing Layout are produced through interacting failures of provision, access, inclusion and governance. The planned character of the neighbourhood did not prevent recreational inequality; instead, weak enforcement of child-centred planning allowed unequal and often inadequate school recreation to persist. This is the paper's main empirical contribution: it shows that the planned city can still be recreationally unjust for children.

The conceptual contribution is that play deserts should not be defined only as places without playgrounds. The evidence shows that play deserts also emerge where playgrounds exist but are bare, unsafe, overcrowded, poorly maintained, inaccessible to children with disabilities, or structured around narrow forms of play that exclude girls and less physically assertive pupils. This extends urban green-space equity literature, which has long argued that access must be understood multidimensionally rather than through simple availability measures (Rigolon, 2016; Wolch et al., 2014). It also complements school-environment research by showing that schoolyards and recreational areas should be treated as rights-bearing and developmental spaces, not as leftover land within school compounds (Baró et al., 2021; Flax et al., 2020; UNICEF, 2018).

The practical contribution is that addressing play deserts requires more than providing equipment. It requires standards for school recreational space, child-responsive design, inclusive access, supervision, maintenance budgets, community participation, and coordination between education and planning authorities. In this sense, school recreational facilities are social infrastructure. Without governance, they decline; without inclusion, they exclude; without maintenance, they become unsafe; and without child-centred design, they fail to meet the needs of those they are meant to serve. The evidence from Federal Housing Layout therefore confirms that children's right to play will remain unevenly distributed unless recreation is deliberately built into the design, management and governance of school environments.

5. CONCLUSION

This paper examined how recreational inequalities are produced within primary schools in Federal Housing Layout, Owerri, a planned urban neighbourhood where formal spatial planning has not translated into equitable child-friendly recreational provision. The findings show that the challenge is not simply the absence of playgrounds, but the production of play deserts: school environments where recreational spaces are absent, inadequate, unsafe, inaccessible, poorly maintained, or unable to

support meaningful and inclusive play. This distinction between nominal provision and effective provision is central to the paper's contribution. A school may possess open space, sports equipment, or isolated play structures, yet still fail to provide children with safe, regular, diverse, and developmentally appropriate recreational opportunities.

The study demonstrates that public–private differences shape the geography of school recreation in uneven ways. The public school had comparatively larger land but lacked functional and modern recreational infrastructure, while many private schools had made limited investments in play equipment but were constrained by small plots and overcrowded compounds. This creates a spatial paradox in which land availability does not necessarily produce recreational quality, and facility visibility does not necessarily guarantee adequacy. The findings further show that pupils' recreational needs are diverse, extending beyond bare playgrounds to include larger play areas, modern equipment, sports courts, shaded spaces and creative play environments. Gendered differences in preference and safety perception reveal that recreational spaces are not experienced equally by all children. The near absence of inclusive design for children with disabilities further confirms that school recreational planning remains insufficiently attentive to universal access.

The paper concludes that play deserts in planned Nigerian urban neighbourhoods are produced through the interaction of weak planning enforcement, inadequate investment, poor maintenance systems, restricted access, limited supervision and the marginalisation of children's voices in school-space design. School recreation should therefore be understood as essential social infrastructure rather than as an optional supplement to formal education. Its absence or poor quality affects not only physical activity, but also children's social interaction, emotional well-being, creativity, safety and everyday experience of the school environment.

The paper recommends that education and planning authorities establish enforceable minimum standards for recreational provision in all primary schools. These standards should cover space, safety, equipment, accessibility, shade, supervision, maintenance and inclusive design, and should form part of school approval, inspection and renewal processes. Public schools require targeted public investment to convert underused land into safe, functional and inclusive recreational environments. Private schools, meanwhile, should be assessed not merely by the presence of play equipment, but by adequacy, pupil-space ratios, safety, accessibility and usability.

The paper also recommends the institutionalisation of child-centred recreational planning. Schools should consult pupils through age-appropriate methods so that recreational spaces reflect children's actual preferences rather than adult assumptions. Maintenance should be organised through shared responsibility among school management, parent-teacher associations, local authorities and planning agencies. Without a clear governance framework, even newly provided facilities are likely to deteriorate.

Overall, creating child-friendly schools requires more than classrooms, enrolment growth and academic instruction. It requires deliberate planning for play, movement, safety, inclusion and social interaction. In Federal Housing Layout, the planned city will become genuinely child-friendly only when children's recreational rights are built into the everyday design, management and governance of school environments.

6. COMPETING INTEREST

None to declare.

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