



Inclusive Urban Regeneration: Meeting the Spatial Needs of Persons with Disabilities in Public Educational Infrastructure in South-West Nigeria

¹Durojaiye B.J., ²Babamboni A., ³Uzoma F.U., ⁴Atulegwu A.E.

^{1,2}*Department of Architecture, College of Postgraduate Studies,
Caleb University, Imota, Lagos State, Nigeria.*

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ABSTRACT

The ongoing lack of accessible public educational facilities in Nigeria shows deep-rooted planning issues based on outdated views of disability. This study looks closely at how inclusive urban regeneration can meet the spatial needs of people with disabilities in public tertiary institutions in South-West Nigeria. It relies on the social model of disability and spatial justice theory. The research uses a sequential explanatory mixed-methods approach that includes accessibility audits, questionnaire surveys (N = 60), semi-structured interviews, and spatial simulation modelling. The findings indicate a low overall perception of accessibility (grand mean = 2.44/5) and an Accessibility Compliance Index (ACI) of 47.3%, pointing to poor to moderate structural compliance across institutions. A strong positive correlation ($r = 0.71$) between physical accessibility and psychological inclusion highlights how the conditions of the built environment affect academic participation. Thematic analysis reveals that aesthetic-driven regeneration, weak enforcement of laws, gaps in technical knowledge, and cost perception are major barriers to inclusive planning. Experimental simulation shows that targeted retrofitting can boost compliance to 81.5%. This confirms that incorporating universal design into regeneration strategies is possible. The study concludes that we need to rethink urban regeneration as a means of promoting spatial justice rather than just an aesthetic makeover. Implementing universal design principles in regeneration policy is crucial for avoiding the ongoing exclusion of people in public educational infrastructure.

Keywords: Inclusive Urban Regeneration, Spatial Justice, Disability-Inclusive Planning, Universal Design, Educational Infrastructure Accessibility, South-West Nigeria.

I. INTRODUCTION

The ongoing presence of inaccessible educational infrastructure shows how the medical model of disability has historically dominated our understanding of disability. This model sees disability as a personal weakness or problem that needs treatment (Oliver, 1990). In this view, exclusion is blamed on physical limitations rather than on how environments are designed. Because of this, the built environment is seldom examined as a source of inequality.

In contrast, the social model of disability looks at disability as a condition shaped by society. It argues that exclusion comes mainly from environmental, institutional, and social barriers instead of from the impairment itself (Barnes, 1991; Oliver, 1990). Here, inaccessible infrastructure is seen as more than just a mistake; it reflects a failure in how systems are designed. The blame for exclusion shifts from individuals to the spaces and policies that affect participation.

In many cities, public educational facilities still reflect norms that favor able-bodied people. Features like stair-only access, narrow hallways, limited room to move, lack of tactile paving and Braille, poor lighting contrast, bad acoustic design, and inaccessible restrooms create obstacles to independent access and participation. These design flaws not only inconvenience students with disabilities but also create ongoing disadvantages by limiting their autonomy, mobility, and equal chances in education.

The implications reach far beyond architecture. From the viewpoint of spatial justice, exclusionary infrastructure shows an unfair distribution of space and access (Soja, 2010). Public schools, as local institutions funded by shared resources, must ensure they are accessible to everyone. When urban renewal projects focus on modernization, visual improvement, or increasing capacity without including updates for accessibility, they create what Soja (2010) calls



spatial injustice. This term describes the systemic inequalities that are built into how space is organized. Therefore, inaccessible educational infrastructure shouldn't be seen as just a technical problem. It is a structural planning issue that sits at the crossroads of disability theory and urban governance.

Aim and Objectives of the study

To critically examine the role of inclusive urban regeneration in addressing the spatial needs of persons with disabilities within public educational infrastructure.

The objectives are:

1. To explore the basic ideas behind inclusive urban regeneration and planning that includes people with disabilities.
2. To identify the physical barriers that people with disabilities face in public educational buildings.
3. To evaluate how well regeneration efforts, include universal design principles.

II. LITERATURE REVIEW

This chapter looks at peer-reviewed studies and reliable research on disability theory, inclusive urban regeneration, spatial justice, universal design, and accessibility in public educational facilities. It combines theoretical and empirical literature to create a basis for understanding how regeneration processes can meet the spatial needs of people with disabilities.

2.1. Conceptualizing Disability within the Built Environment

The Medical Model and Institutional Design

The medical model of disability sees disability as an individual impairment or functional deficit that needs correction, treatment, or adjustment (Oliver, 1990). In this view, exclusion from educational facilities is blamed on bodily limitations instead of environmental design. As a result, the built environment is often overlooked as a source of structural inequality. This approach has historically shaped architectural practices, especially in developing areas where accessibility features were viewed as optional instead of necessary design elements. According to the medical model, the responsibility for participation mainly falls on the individual rather than the surrounding system.

The Social Model and Environmental Barriers

In contrast, the social model reframes disability as socially produced, arguing that

exclusion arises from environmental, institutional, and attitudinal barriers (Barnes, 1991; Oliver, 1990). According to this perspective, inaccessible educational buildings do not merely reflect technical oversight; they represent systemic design failure. The shift from medical to social interpretations relocates responsibility from the individual body to planning systems, governance structures, and architectural practice. In educational settings, barriers such as stair-only circulation, narrow corridors, absence of tactile paving, inadequate signage, and inaccessible sanitation facilities institutionalize disadvantage.

This theoretical shift provides the normative foundation for inclusive urban regeneration, positioning accessibility as a structural obligation rather than a charitable provision.

Disability as a Rights-Based Framework

Contemporary disability discourse extends beyond the social model into a rights-based framework grounded in equity and citizenship. The United Nations (2020) emphasizes that accessibility is fundamental to achieving inclusive development and sustainable development goals. Similarly, the World Health Organization (2020) highlights the structural nature of disability-related exclusion, noting that environmental inaccessibility remains a major barrier to participation.

Within Nigeria, the National Disability Rights Commission Act (2018) mandates accessible public infrastructure. However, legislative recognition does not automatically translate into spatial implementation, raising questions about enforcement and planning integration.

2.2. Urban Regeneration and Inclusivity

Urban regeneration is often seen as a way to improve physical spaces, upgrade infrastructure, modernize, and enhance the environment. However, many regeneration strategies tend to focus more on economic growth and visual appeal than on including everyone in the community. For instance, sustainability initiatives like green facade systems have been promoted as ways to handle urban heat in Lagos (Afolabi et al., 2025). While these projects do improve thermal performance and environmental strength, they highlight a common pattern: environmental goals often receive more attention than making spaces accessible for all.

This imbalance suggests that regeneration can unintentionally leave some people out if designs that include those with disabilities are not considered during policy and planning. Therefore,



inclusive urban regeneration needs a more connected approach that treats environmental quality and fair access to spaces as equally important.

2.3. Spatial Justice and Educational Infrastructure

Spatial justice theory argues that space is created by society and shaped by politics, which influences access to opportunities and participation (Soja, 2010). When public educational facilities lack accessibility features, how space is organized becomes a source of inequality. Educational institutions, as publicly funded civic spaces, reflect a shared investment. Their inaccessibility shows an unfair distribution of spatial resources. From a spatial justice viewpoint, exclusionary infrastructure represents systemic inequality built into spatial arrangements (Soja, 2010). In this situation, inclusive regeneration acts as a way to redistribute space. Making spaces accessible is not just about meeting building codes; it is a way to fix unfair spatial systems.

2.4. Universal Design in Academic Institutions

Universal design principles offer a practical framework for applying inclusive theory in physical spaces. These principles focus on creating environments that everyone can use, regardless of their abilities, without needing changes. In academic institutions, universal design includes more than just ramps and elevators; it also covers:

- i. Accessible seating configurations
- ii. Adequate manoeuvring space
- iii. Acoustic optimization
- iv. Lighting contrast
- v. Wayfinding systems
- vi. Assistive technologies

Empirical studies of Nigerian university auditoriums show major shortcomings in these areas. Atulegwu et al. (2025) found insufficient ramp access, poor seating options for wheelchair users, and a lack of compliance with accessibility standards. These architectural barriers limit participation and lead to social exclusion.

Moreover, inaccessible environments can impact mental health. Olalere et al. (2022) discovered that public infrastructure that excludes people with disabilities heightens feelings of isolation and marginalization. Olanrewaju et al. (2023) also identified links between accessible

architectural design and better mental health outcomes.

These findings highlight that accessibility is not just a physical issue; it is closely tied to well-being and academic success.

Accessibility in Nigerian Educational Infrastructure

Empirical studies show that Nigerian public educational infrastructure has significant accessibility gaps. Accessibility audits reveal that many facilities do not meet national and international standards (Adegoke et al., 2022). Similarly, Oyedele et al. (2024) found that university auditoriums have limited features for accommodation. Even though the National Disability Rights Commission Act (2018) requires public facilities to be accessible, enforcement is often inconsistent. Atulegwu et al. (2025) mention that while some institutions have made small improvements, many still lack suitable architectural features. This gap in implementation shows a disconnect between policy and practice in upgrading facilities.

2.5. Synthesis and Identified Research Gap

The literature reveals several critical insights:

1. Disability exclusion is created through poor spatial design (Barnes, 1991; Oliver, 1990).
2. Accessibility is a rights-based obligation linked to inclusive development (United Nations, 2020; WHO, 2020).
3. Nigerian educational infrastructure shows ongoing accessibility problems (Adegoke et al., 2022; Atulegwu et al., 2025).
4. Discussions on regeneration often emphasize environmental sustainability more than inclusive accessibility (Afolabi et al., 2025).
5. Spatial justice theory views infrastructure inaccessibility as a form of systemic inequality (Soja, 2010).

However, a significant research gap remains. Many studies assess accessibility in existing buildings, but few look closely at how urban regeneration processes can be organized to meet the spatial needs of people with disabilities in public educational infrastructure. Most research focuses on evaluating buildings after construction instead of viewing regeneration as a way to transform planning. This study aims to fill that gap by presenting inclusive urban regeneration as a way to incorporate universal design in public educational systems.



III. METHODOLOGY

3.1. Research Design

This study uses a sequential explanatory mixed-methods design that combines quantitative accessibility audits and survey data with qualitative interviews and spatial experimentation. This design was chosen because accessibility in public educational infrastructure is complex and has many dimensions. It includes both measurable physical compliance and real-world experiences (Creswell & Plano Clark, 2018).

The study is based on a practical approach, understanding that accessibility issues need both empirical assessment and context-based interpretation. Quantitative data highlight measurable accessibility gaps, while qualitative research examines the systemic barriers present in regeneration processes.

3.2. Study Area

The research took place in selected public tertiary institutions in Lagos State, Nigeria. Lagos is a fast-growing urban area where regeneration projects focus more on environmental sustainability (Afolabi et al., 2025). However, disability-inclusive design is still not firmly established.

3.3. Population and Sampling

Target Population: Public universities undergoing renovation or regeneration. Students with physical and mobility impairments. Facility managers and planning officials. Architects involved in campus redevelopment.

Sampling Procedure

- i. Purposive sampling of three public institutions undergoing infrastructural upgrades
- ii. Stratified facility sampling (lecture halls, libraries, administrative buildings, auditoriums)
- iii. Snowball sampling for identifying students with disabilities

Total respondents:

- i. 60 students with disabilities
- ii. 12 facility managers/planners
- iii. 6 architects

3.4. Data Collection Instruments

Accessibility Audit Instrument

A structured checklist was developed based on:

- i. National Disability Rights Commission Act (2018)
- ii. Universal design principles

- iii. International accessibility benchmarks

Indicators measured:

- i. Ramp gradient ($\leq 1:12$)
- ii. Minimum corridor width ($\geq 1200\text{mm}$)
- iii. Door clearance ($\geq 900\text{mm}$)
- iv. Elevator presence
- v. Accessible restrooms
- vi. Tactile paving
- vii. Signage visibility
- viii. Seating integration

Questionnaire Survey

A structured Likert-scale questionnaire was administered to students with disabilities to assess:

- i. Ease of campus mobility
- ii. Access to instructional spaces
- iii. Psychological comfort
- iv. Participation levels

The instrument quantified perceived inclusion and spatial exclusion.

Semi-Structured Interviews

Interviews were conducted with:

- i. Students with disabilities
- ii. Facility managers
- iii. Planning officials

3.5. Experimental Component: Accessibility Simulation

To strengthen empirical contribution, the study incorporated **spatial experimentation** using simulated accessibility modelling. Selected buildings were digitally modelled to compare:

- i. Existing layout conditions
 - ii. Proposed universal design retrofits
- Simulated interventions included:
- i. Ramp insertion
 - ii. Corridor widening
 - iii. Lift installation
 - iv. Reconfigured seating layouts

Accessibility improvements were measured using circulation efficiency and compliance scoring.

3.6. Data Analysis

Quantitative Analysis

Descriptive statistics (mean, frequency distribution, standard deviation) were computed.

An **Accessibility Compliance Index (ACI)** was developed:

$ACI = \frac{\text{Compliant Indicators}}{\text{Total Indicators}} \times 100$

Institutions were categorised as:

- i. Highly Accessible ($\geq 75\%$)
- ii. Moderately Accessible (50–74%)
- iii. Poorly Accessible ($< 50\%$)



Qualitative Analysis

Interview data were analysed using thematic analysis. Coding categories included:

- i. Structural barriers
- ii. Institutional barriers
- iii. Policy-implementation gaps
- iv. Regeneration misalignment

Themes were interpreted through spatial justice theory (Soja, 2010).

- i. Absence of elevators in multi-storey buildings
- ii. Non-compliant ramp gradients
- iii. Inadequate restroom facilities
- iv. Lack of tactile wayfinding

These findings align with previous Nigerian accessibility studies (Adegoke et al., 2022; Atulegwu et al., 2025).

IV. DATA ANALYSIS AND PRESENTATION

Accessibility Audit Findings

Audit results show significant problems across institutions. The average Accessibility Compliance Index (ACI) scores ranged from 38% to 62%, which suggests mostly poor to moderate accessibility. The average ACI across institutions is 47.3%, indicating poor accessibility.

Key deficiencies included:

Data Analysis

Survey results indicate:

- i. 72% of respondents reported difficulty accessing lecture halls.
- ii. 65% reported psychological discomfort navigating campus.
- iii. 81% indicated regeneration projects did not significantly improve accessibility.

Mean perception score: 2.4/5 (low inclusion perception).

OVERALL STATISTICAL SUMMARY:

Dimension	Mean Score
Physical Accessibility	2.34
Regeneration Impact	2.03
Psychological Inclusion	3.10
Institutional Support	2.30

Overall Grand Mean = 2.44

Interpretation: Accessibility perception is generally low.

CORRELATION TABLE:

Variables	r-value
Physical Accessibility & Psychological Inclusion	0.71
Physical Accessibility & Institutional Support	0.63
Regeneration Impact & Physical Accessibility	0.68

Correlation analysis showed a strong positive correlation ($r = 0.71$) between physical accessibility and psychological inclusion.

This supports findings that environmental accessibility influences mental well-being (Olalere et al., 2022; Olanrewaju et al., 2023).

ACCESSIBILITY COMPLIANCE INDEX:

Institution	ACI (%)	Classification
UNILAG	52%	Moderate



LASU	43%	Poor
LASUSTECH	47%	Poor

Mean ACI = 47.3%

Thematic Interview Findings

Four dominant structural themes emerged:

- Participants noted prioritisation of landscaping and facade upgrades over inclusive design consistent with sustainability-focused regeneration discourse (Afolabi et al., 2025).
- Although policies exist, compliance monitoring is limited (United Nations, 2020).
- Architects acknowledged insufficient training in universal design.
- Accessibility is seen as “an additional expense” rather than a structural necessity.

Experimental Simulation Results

Post-retrofit simulation improved ACI from 47.3% to 81.5%.

Measured improvements:

- 34% improvement in vertical accessibility
- 29% increase in circulation efficiency
- 41% improvement in restroom usability

Simulation demonstrates the feasibility of inclusive regeneration when planned systematically.

V. RESULTS AND DISCUSSION

5.1 Structural Nature of Accessibility Deficits

The findings show that the accessibility issues in the chosen public educational institutions are systemic, not just random errors. The average Accessibility Compliance Index (ACI) of 47.3% suggests these institutions fall into the “poor to moderate” accessibility category. This indicates a widespread failure to meet accessibility standards.

The presence of stair-only vertical circulation, ramps with steep gradients, insufficient restroom facilities, and no tactile wayfinding confirms that exclusion is part of the architectural design. These results support the social model of disability (Oliver, 1990; Barnes, 1991), which claims that exclusion due to disability mainly comes from how the environment is designed, rather than from individual impairments.

From a structural point of view, the accessibility issues are not just overlooked details; they reflect design traditions shaped by able-bodied standards. The built environment, therefore, acts as a tool for institutional exclusion.

5.2 Accessibility and Psychological Inclusion

A key empirical contribution of this study lies in the strong positive correlation ($r = 0.71$) between physical accessibility and psychological inclusion. This statistically significant relationship confirms that spatial accessibility directly influences educational experience, participation, and mental well-being. Respondents reporting difficulty accessing lecture halls (72%) and avoiding certain buildings (high mean = 3.88) demonstrate behavioural adaptation to exclusionary spaces. Such adaptation reinforces spatial segregation within campuses.

These findings align with prior Nigerian studies that link inaccessible infrastructure with psychological marginalization (Oalere et al., 2022; Olanrewaju et al., 2023). Accessibility, therefore, functions not merely as a mobility issue but as a determinant of academic equity.

The data suggest that inclusive infrastructure contributes to:

- Increased autonomy
- Improved participation
- Enhanced academic confidence
- Reduced stigma

Thus, accessibility must be understood as both a spatial and psychosocial intervention.

5.3 The Regeneration Paradox: Modernization without Inclusion

Despite active regeneration initiatives within the study area, the Regeneration Impact mean score (2.03) indicates low perceived inclusivity. Notably, respondents strongly agreed (mean = 4.11) that regeneration projects prioritize aesthetics over accessibility. This reveals a regeneration paradox: while urban renewal emphasizes modernization, environmental sustainability, and façade enhancement (Afolabi et al., 2025), disability inclusion remains secondary. Such regeneration practices risk reproducing what Soja (2010) describes as spatial injustice systematic inequality embedded within spatial organization. When retrofitting excludes accessibility considerations, modernization inadvertently reinforces structural exclusion.



The findings suggest that regeneration in South-West Nigerian institutions remains infrastructure-focused but not equity-driven.

5.4 Institutional Implementation Gaps

Institutional Support recorded a low mean score (2.30), indicating weak enforcement and accountability structures.

Although the National Disability Rights Commission Act (2018) mandates accessible public facilities, compliance mechanisms appear insufficiently operationalized. The low mean score for policy enforcement (2.05) confirms an implementation gap between legislative intent and spatial reality. This gap reflects governance inertia rather than technical incapacity alone. Accessibility deficits persist not solely because of architectural ignorance but because institutional systems do not systematically prioritize inclusive design.

Weak enforcement frameworks allow accessibility to remain optional rather than mandatory within regeneration processes.

5.5 Feasibility of Inclusive Regeneration: Simulation Evidence

One of the most significant contributions of this study lies in the experimental simulation component. Post-retrofit modelling increased the ACI from 47.3% to 81.5%, demonstrating that inclusive regeneration is technically feasible.

Improvements included:

- i. 34% enhancement in vertical accessibility
- ii. 29% improvement in circulation efficiency
- iii. 41% increase in restroom usability

These findings challenge the perception that accessibility retrofitting is prohibitively complex or economically unrealistic, rather than representing an excessive cost burden, simulation results indicate that structured planning integration can significantly elevate accessibility standards within existing campus layouts.

This reinforces the argument that exclusion is not inevitable but structurally produced and therefore structurally correctable.

5.6 Theoretical Implications

This study contributes theoretically in three key ways:

- i. It empirically reinforces the social model of disability within an urban regeneration context.
- ii. It operationalizes spatial justice theory through measurable accessibility indicators.

- iii. It reframes regeneration as a redistributive spatial intervention rather than a cosmetic modernization strategy.

By linking disability theory to regeneration policy, the research advances discourse beyond post-construction audits toward proactive spatial transformation.

5.7 Policy and Planning Implications

The findings suggest the need for structural reforms:

- i. Mandatory Accessibility Compliance Index reporting for public institutions.
- ii. Integration of universal design benchmarks into regeneration approval frameworks.
- iii. Professional retraining for architects and planners.
- iv. Independent accessibility monitoring bodies.
- v. Participatory planning mechanisms involving persons with disabilities.

Inclusive urban regeneration must transition from symbolic compliance to embedded structural planning.

5.8 Conclusion

The persistence of inaccessible educational infrastructure in South-West Nigeria reflects systemic planning shortcomings rooted in able-bodied spatial norms and weak institutional enforcement. Urban regeneration, when detached from universal design integration, risks institutionalizing exclusion under the guise of modernization.

This study concludes that inclusive urban regeneration must be reconceptualized as a spatial justice intervention. Embedding universal design principles within regeneration frameworks is not merely a technical enhancement but a structural requirement for equitable educational participation.

5.9 Recommendations

- I. Make Universal Design a Mandatory Standard: Universal design should be a requirement in planning policies for educational facilities and urban regeneration projects, instead of just an optional guideline. This will ensure that inclusivity is considered from the start of each project.
- II. Improve Oversight and Accountability: We need to strengthen how accessibility standards are enforced. Regular inspections, clear approval processes, and real consequences for non-compliance will help turn policies into visible results.



- III. Reframe Urban Regeneration as Inclusive Development: Urban regeneration should go beyond physical upgrades and be intentionally designed to promote fairness and inclusion. Positioning regeneration as a tool for spatial justice will help prevent the ongoing exclusion of vulnerable groups.
- IV. Enhance Professional Training and Awareness: Built environment professionals, including architects, planners, and developers, should have practical knowledge of inclusive design. Ongoing training can help change long-standing design habits that often overlook diverse user needs.
- V. Engage Persons with Disabilities in the Design Process: Including people with disabilities in planning and decision-making processes will ensure that designs reflect real user experiences. Their input is essential to creating spaces that are genuinely accessible and functional.
- VI. Prioritize Funding for Accessibility Improvements: Dedicated financial support is necessary to upgrade existing educational infrastructure. Retrofitting older buildings should be a priority, especially within broader urban renewal initiatives.
- VII. Track Accessibility Outcomes in Projects: Clear indicators should be created to assess how well projects meet accessibility goals. Including these metrics into evaluation frameworks will promote transparency and ensure that inclusivity is not ignored.

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