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Beyond National University Commission (NUC) Accreditation: Institutional, Policy, and Awareness Barriers to the Implementation of Industrial Design Education in Nigerian Universities

By

Shagaya Mashood Olanrewaju
Department of Fine Arts & Applied Arts, Faculty of Environmental Sciences, Kwara State University, Malete
+2348033738912: E-Mail: sagayus@gmail.com

ABSTRACT
Industrial Design (ID) is globally recognized as a strategic discipline that links creativity, technology, and manufacturing to national development and economic competitiveness. In Nigeria, the National Universities Commission (NUC) has approved a comprehensive Industrial Design curriculum, largely domiciled within the Faculties of Environmental Sciences. Despite this formal accreditation, the implementation of Industrial Design programmes across Nigerian universities remains weak, uneven, and, in many cases, entirely absent. This conceptual paper critically examines the systemic, institutional, and policy-related barriers constraining effective implementation, including limited awareness, weak student interest, misaligned educational pipelines, institutional preference for other environmental disciplines, high establishment costs, leadership inertia, and limited political will. Drawing on a conceptual thematic synthesis of existing literature, policy documents, and contextual evidence, the paper argues that accreditation alone is insufficient to sustain vocational and creative programmes without coordinated policy support, institutional commitment, and educational alignment. The study contributes to design education and higher education policy discourse by offering a multi-level explanation of programme marginalisation and outlining reform pathways relevant to Nigeria and comparable developing contexts

Keywords: Industrial Design Education; Higher Education Policy; Institutional Barriers; Creative Economy; Nigeria

INTRODUCTION

Industrial Design (ID) occupies a strategic position at the intersection of creativity, technology, manufacturing, and human-centred problem solving. In both advanced and emerging economies, Industrial Design

education has been deliberately deployed as a catalyst for innovation, industrial competitiveness, and economic diversification

Through the application of design thinking, user-centred methodologies, and materials and process knowledge, industrial designers contribute to the development of products, systems, and services that respond to functional, aesthetic, environmental, and socio-cultural needs. As global markets become increasingly competitive and technology-driven, the capacity to design products that are usable, sustainable, and culturally responsive has become a critical determinant of national economic successes

Beyond aesthetics, Industrial Design contributes to functionality, sustainability, ergonomics, safety, manufacturability, and market relevance. These dimensions are essential in contemporary production systems characterised by rapid technological change, shortened product life cycles, and heightened consumer expectation. Countries that have invested systematically in Industrial Design education—often in close alignment with industrial and innovation policy—have achieved notable gains in manufacturing efficiency, product differentiation, export competitiveness, and national branding. In contrast, countries that undervalue design education tend to remain consumers rather than producers of high-value industrial goods, with limited capacity for endogenous innovation and value addition

In Nigeria, Industrial Design is formally recognised within the higher education system through the National Universities Commission (NUC) curriculum. The curriculum is comprehensive and vocationally oriented, combining studio-based practice, materials and process studies, computer-aided design, and theoretical foundations intended to prepare graduates for careers in industrial production, creative industries, and environmentally responsive design. Structurally, Industrial Design programmes are typically housed within Faculties of Environmental

Sciences alongside architecture, building technology, estate management, and urban and regional planning. This interdisciplinary positioning is intended to promote collaboration across built environment disciplines and situate design education within broader concerns of sustainability, spatial development, and material culture

In practice, however, a persistent contradiction appears to exist between policy recognition and institutional reality. Although Industrial Design has received formal accreditation and curriculum approval, available literature and policy analyses suggest that programme implementation across many Nigerian universities remains uneven and, in some cases, limited. Where programmes are operational, studies have reported challenges such as low student enrolment, inadequate studio and workshop facilities, limited specialised staffing, and weak institutional visibility (Akinbogun, 2016; Olotuah & Adesiji, 2019). These recurring observations raise critical questions about the extent to which accreditation alone can effectively translate policy intentions into sustained educational practice and measurable programme outcomes within the Nigerian higher education context.

This conceptual paper argues that the challenges confronting Industrial Design education in Nigeria extend far beyond curriculum design or NUC approval. Rather, they reflect a complex interplay of structural, institutional, socio-cultural, and political constraints. These include low public and institutional awareness of the discipline, weak student interest arising from poorly aligned educational pipelines, institutional preference for other Environmental Sciences programmes, high establishment and maintenance costs, limited leadership commitment within universities, and weak political will among policymakers and legislators. By synthesising existing literature, policy documents, and contextual evidence, this paper develops a comprehensive conceptual explanation of why Industrial Design education remains marginalised in

Nigeria and how this condition undermines national development aspirations in an increasingly design-driven global economy.

AIM OF THE STUDY

The aim of this conceptual paper is to critically interrogate the disconnect between accreditation policy and the actual institutionalisation of Industrial Design education in Nigerian universities.

OBJECTIVES OF THE STUDY

The objectives of the study are:

- to examine the structural and institutional conditions affecting the establishment of Industrial Design programmes in Nigerian universities;
- to analyse policy and regulatory limitations influencing the implementation of accredited programmes and
- to suggest recommendation for strengthening the sustainability and visibility of Industrial Design education.

RESEARCH QUESTION

How do institutional structures and policy frameworks mediate the effectiveness of accredited Industrial Design programmes in Nigerian universities?

SCOPE OF THE STUDY

This conceptual study focuses on Industrial Design education within Nigerian public and private universities where the programme is approved or potentially approved by the National Universities Commission. The scope is limited to systemic, institutional, and policy-related factors influencing programme implementation, including awareness, student interest, educational pipelines, faculty dynamics within Faculties of Environmental Sciences, cost of establishment, leadership commitment, and political will. The study does not involve primary empirical data collection or the evaluation of specific university facilities. Instead, it synthesises existing academic literature, policy documents, curriculum frameworks, and contextual evidence to develop

an explanatory framework relevant to Nigeria's higher education system and transferable to other developing contexts facing similar implementation challenges.

SIGNIFICANCE OF THE STUDY

This study contributes theoretically to design education and higher education policy literature by explaining why accreditation does not automatically translate into programme implementation. By integrating human capital, institutional, and creative economy perspectives, it offers a multidimensional framework for analysing programme marginalisation in developing contexts. The study is also significant for policymakers, university administrators, and educators seeking to reposition Industrial Design education as a strategic lever for innovation, industrial development, and global competitiveness in Nigeria.

IMPLICATIONS OF THE STUDY

This study has significant implications for policy formulation, institutional governance, and educational planning in Nigeria. At the policy level, it demonstrates that accreditation-led approaches are inadequate for sustaining vocational and creative disciplines without complementary funding mechanisms, legislative backing, and explicit integration of Industrial Design into national industrialisation and creative economy strategies. Institutionally, the study underscores the need for stronger leadership commitment, equitable resource allocation, and deliberate positioning of Industrial Design as a strategic discipline within the Faculties of Environmental Sciences rather than a peripheral programme. Educationally, the findings highlight the importance of aligning secondary and tertiary curricula by introducing design, technology, and creative problem-solving subjects early. Collectively, these implications underscore the need for a coordinated, multi-level reform approach involving policymakers, university administrators, curriculum planners, and industry stakeholders to reposition Industrial

Design education as a catalyst for innovation, manufacturing capacity, and global competitiveness in Nigeria.

CONCEPTUAL AND THEORETICAL FRAMEWORK

This study is anchored on three complementary theoretical perspectives: Human Capital Theory, Institutional Theory, and Creative Economy Theory. Together, these frameworks provide a multidimensional lens for understanding the economic, organisational, and developmental significance of Industrial Design education and the consequences of its marginalisation.

Human Capital Theory posits that investment in education and skills development enhances productivity, innovation capacity, and long-term economic growth (Becker, 1993). From this perspective, Industrial Design education represents a strategic investment in specialised human capital capable of supporting manufacturing efficiency, product innovation, entrepreneurship, and value addition. The persistent underdevelopment of Industrial Design programmes in Nigeria, therefore, reflects not only an educational gap but also a loss in national human capital formation, with implications for employment generation and industrial competitiveness.

Institutional Theory explains how organisational norms, leadership priorities, power relations, and informal practices shape programme adoption and sustainability beyond formal regulations (Scott, 2014). Although NUC accreditation confers legitimacy, actual implementation is mediated by institutional preferences, internal politics, and resource allocation practices. This framework is particularly useful for explaining why Industrial Design is often overshadowed by other programmes within the Faculties of Environmental Sciences despite equivalent accreditation status.

Creative Economy Theory emphasises the growing role of creativity, design, and cultural production in contemporary economic development

(Howkins, 2013; UNCTAD, 2022). Industrial Design occupies a central position in translating creative ideas into functional, manufacturable, and marketable products. Weak investment in design education, therefore, constrains a country's ability to participate effectively in creative and design-driven global markets, reinforcing patterns of import dependence and limited industrial diversification.

REVIEW OF RELATED LITERATURE

Recent Global and Contemporary Perspectives (2020–2024)

Recent scholarship reinforces the strategic importance of design education in national innovation systems, particularly in the context of digital transformation, sustainability, and Industry 4.0. Buchanan (2020) argues that contemporary design education increasingly emphasises systems thinking, enabling designers to address complex socio-technical challenges rather than isolated product problems. Similarly, Manzini (2021) highlights the role of design in social innovation and sustainability transitions, noting that design education must equip students to work across disciplines and scales.

In the post-COVID-19 context, UNESCO (2022) and UNCTAD (2023) report that countries with strong creative and design capacities demonstrated greater resilience to supply chain disruptions and economic shocks. Design-led approaches supported local manufacturing, digital fabrication, and adaptive production networks—areas of particular relevance to developing economies such as Nigeria. These contemporary perspectives underscore the argument that marginalising Industrial Design education constrains national adaptive capacity during crises and periods of transformation.

Industrial Design Education and Global Development

Industrial Design education is widely recognised as a catalyst for innovation, industrial competitiveness, and sustainable development. In

advanced economies, design education is closely integrated with industrial policy, research and development systems, and manufacturing ecosystems. Scholars argue that design-led innovation enhances product differentiation, usability, and consumer satisfaction while reducing production inefficiencies (Norman, 2013; Verganti, 2009). As a result, design-intensive firms and economies tend to outperform competitors in terms of value creation and brand strength.

In developing economies, Industrial Design education plays an additional role in adapting imported technologies to local socio-cultural, economic, and environmental contexts. UNESCO (2021) notes that design enables the transformation of indigenous materials, crafts, and technologies into competitive products that generate employment and support inclusive growth. Where design education is effectively integrated into industrial and creative economy strategies, it contributes to the growth of small- and medium-scale enterprises and the formalisation of informal production sectors.

Industrial design education in Africa and Nigeria

The literature on design education in Africa highlights persistent challenges, including funding constraints, inadequate infrastructure, limited policy support, and weak public perception (Amankwah & Boateng, 2018). In many African countries, design education remains peripheral within higher education systems dominated by science, engineering, and professional disciplines. (Amankwah & Boateng, 2018; Shagaya, 2021). Nevertheless, there is growing recognition of design's potential to address local development challenges through context-sensitive innovation.

In Nigeria, Industrial Design evolved historically from fine and applied arts traditions and gradually incorporated industrial and technological orientations. Despite periodic curriculum reforms and NUC standardisation, the discipline continues to struggle for recognition and

institutional support (Akinbogun, 2016). The placement of Industrial Design within the Faculties of Environmental Sciences was intended to promote interdisciplinarity; however, evidence suggests that programme hierarchies within these faculties often disadvantage Industrial Design in favour of architecture and construction-related disciplines perceived as more prestigious and professionally regulated (Olotuah & Adesiji, 2019).

Awareness, Career perception, and Student enrolment

Career choice literature consistently identifies awareness, social perception, and perceived economic value as critical determinants of student enrolment patterns (Super, 1990). Disciplines that lack visibility in career guidance programmes and public discourse tend to attract fewer students and receive lower institutional priority. In Nigeria, limited exposure to Industrial Design at the secondary school level contributes significantly to low awareness among prospective students and parents (Adeyemi, 2018). This lack of awareness perpetuates misconceptions about the discipline as purely artistic or craft-based, with limited career prospects.

Policy, Leadership, and Political Will

Higher education policy research highlights leadership commitment, governance structures, and political prioritisation as decisive factors in programme sustainability (Saint et al., 2020; Salmi, 2021). Policy coherence—alignment between education policy, industrial policy, and innovation strategy—is essential for vocational and creative disciplines to thrive (OECD, 2021). In Nigeria, design and creative disciplines remain weakly embedded in national development planning, despite increasing rhetoric around the creative economy and youth entrepreneurship (Edewor & Omisakin, 2022).

METHODOLOGICAL APPROACH

Conceptual Thematic Synthesis

This study adopts a conceptual thematic synthesis approach designed to generate an integrative explanatory framework rather than primary empirical generalisations. Relevant sources were purposively selected based on their direct engagement with Industrial Design education, higher education policy implementation, creative economy development, and curriculum reform in Nigeria and comparable developing contexts. The analysis followed a systematic iterative process involving repeated reading of texts, open coding of key concepts, comparison across sources, and abstraction into higher-order thematic categories. To enhance analytical rigour, data were triangulated across peer-reviewed literature, national policy documents, curriculum frameworks, and institutional reports. The emergent themes were subsequently interpreted through the lenses of Human Capital Theory, Institutional Theory, and Creative Economy Theory to ensure theoretical coherence and explanatory depth. This methodological approach is appropriate for contexts where empirical data are fragmented but where policy critique and theory-building are required to explain persistent programme marginalisation and guide future empirical investigations.

THEMATIC ANALYSIS

The thematic analysis yielded the following interrelated findings

Awareness deficit and disciplinary invisibility

A dominant theme in the literature is the low level of awareness surrounding Industrial Design as an academic and professional discipline. Industrial Design remains largely invisible in career guidance programmes, secondary school curricula, and public discourse. This invisibility extends beyond prospective students and parents to include educators, university administrators, and policymakers. As a result, the discipline is frequently misunderstood as a narrow artistic pursuit rather

than a strategic driver of industrial innovation. Low awareness directly reduces student demand, which in turn discourages universities from committing resources to programme development.

Weak student interest and a Broken educational pipeline

Closely linked to awareness deficits is the weakness of the educational pipeline feeding into Industrial Design programmes. The absence of structured exposure to design thinking, materials technology, and creative problem-solving at the secondary school level means that many students encounter Industrial Design for the first time at university. This late exposure limits informed career choice, reduces preparedness, and contributes to high attrition rates, further undermining programme sustainability.

Institutional preference within Environmental Sciences

Within the Faculties of Environmental Sciences, Industrial Design is often treated as a peripheral programme. Architecture and construction-related disciplines typically enjoy higher enrolment, professional recognition, and revenue potential, leading administrators to prioritise them in resource allocation, staffing, and space distribution. This institutional preference reinforces the marginal status of Industrial Design despite formal accreditation.

Cost of establishment and Resource constraints

Industrial Design education is inherently resource-intensive, requiring studios, workshops, specialised equipment, and consumable materials. For many universities—particularly private institutions operating under market-driven models—the perceived cost of establishing and sustaining Industrial Design programmes is prohibitive. In the absence of targeted funding or policy incentives, administrators often view investment in Industrial Design as financially risky.

Leadership commitment and Institutional will

Leadership commitment emerges as a critical determinant of programme success. Where university leaders lack understanding of Industrial Design's relevance to national development and industrialisation, the programme receives minimal strategic attention. Conversely, institutions with visionary leadership are more willing to invest in design education despite resource constraints.

Policy silence and Weak political will

At the macro level, the thematic synthesis reveals persistent policy silence around Industrial Design education. Despite national rhetoric on innovation, industrialisation, and youth empowerment, design education rarely features prominently in legislative or strategic frameworks. Limited political will translates into weak advocacy, fragmented funding mechanisms, and minimal coordination between education and industrial policy

DISCUSSION

The findings demonstrate that the marginalisation of Industrial Design education in Nigeria is systemic rather than curricular. Accreditation provides legitimacy but not sustainability. From a Human Capital perspective, underinvestment limits the production of skills essential for innovation-led growth. Institutional Theory explains how internal hierarchies and leadership priorities override formal approval, while Creative Economy Theory highlights how neglecting design education constrains participation in global value chains.

Awareness deficits create a self-reinforcing cycle of low enrolment and weak institutional investment. Cost concerns are intertwined with risk perception, particularly in market-oriented university systems. Leadership commitment emerges as a decisive factor, underscoring the role of institutional culture. At the macro level, policy silence legitimises neglect and undermines coordinated reform. Collectively, these insights

point to the need for integrated reform involving policymakers, university leadership, curriculum planners, industry stakeholders, and secondary education systems.

RECOMMENDATIONS

Based on the identified institutional, policy, and awareness barriers, the study recommends a coordinated multi-level reform strategy to strengthen the sustainability and visibility of Industrial Design education in Nigerian universities. First, the National Universities Commission (NUC) should complement accreditation with post-approval implementation monitoring and targeted advocacy for Industrial Design programmes. Second, university leadership should incorporate Industrial Design into institutional strategic plans, ensure equitable resource allocation, and promote interdisciplinary collaboration within the Faculties of Environmental Sciences. Third, curriculum authorities at the secondary school level should introduce foundational design and technology subjects to strengthen the educational pipeline and stimulate early student interest. Fourth, policymakers and legislators should explicitly integrate Industrial Design education into national creative economy, industrialisation, and innovation policies, supported by dedicated funding schemes and industry partnerships. Collectively, these actions will enhance programme sustainability, disciplinary visibility, and Nigeria's capacity for design-driven development.

CONCLUSION

The marginalisation of Industrial Design education in Nigerian universities reflects systemic challenges extending far beyond NUC accreditation. Awareness deficits, institutional preferences, resource constraints, leadership inertia, and weak political will collectively undermine effective implementation. Addressing these challenges requires coordinated policy action, institutional reform, and educational pipeline development. Without such intervention, Nigeria's aspiration to

compete in design-driven industries and innovation-led economies will remain unrealised

AREAS OF FURTHER EMPIRICAL RESEARCH

Future studies should empirically examine institutional decision-making, student perception of industrial design careers, funding patterns across universities, and comparative models in other developing economies. Such studies would provide evidence-based insights to complement and extend the conceptual framework proposed in this paper

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