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TEACHING AND LEARNING SWIMMING WITHOUT WATER: A CASE OF NIGERIAN NEW CURRICULUM REFORM

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Abstract

The recent overhaul of Nigeria's national curriculum for basic and senior secondary education implemented in the 2025/2026 academic year aims to modernize education by streamlining subjects and mandating practical, high-demand skills such as Solar PV Installation and Digital Technologies. This paper, written from the perspective of Instructional Technology argues that the ambition of the reform is fundamentally undermined by a catastrophic misalignment between design and capacity, conceptualized as ***Teaching and Learning Swimming without Water.*** *Utilizing the ADDIE model, the analysis identifies a critical failure in the Analysis phase, which ignored severe, quantifiable systemic deficits: an inadequate national teacher-pupil ratio of more than (1:35) and a pervasive lack of specialized infrastructure and equipment. This capacity gap forces instructional delivery to default to theoretical learning, negating the practical skill objectives. To bridge this divide, the paper proposes strategic remediation through Instructional Technology, including the deployment of Virtual Learning Environments (VLEs) and simulation software to substitute for absent physical laboratories, and the use of technology-aided structured pedagogy for scalable teacher professional development. Ultimate success hinges on adopting a phased, data-driven implementation model that respects real-world capacity constraints.*

Keyword: Teaching, Learning, Swimming Without Water, Curriculum Reform, Nigerian Education

Introduction

The Federal Government of Nigeria's recent overhaul of the national curriculum for basic and senior secondary education represents a significant and necessary policy commitment aimed at modernizing the Nigeria system of education. Driven by extensive consultation with key stakeholders, including the Nigerian Educational Research and Development Council (NERDC) and various examination bodies, the reform is designed to address longstanding issues of subject overload, promote essential skill development, and align Nigerian education with contemporary global best practices (Alausa & Ahmad, 2025 ; FME, 2025). The objective is clear: to ensure that students are equipped with the knowledge and skills required to thrive in the global economy and live productive lives in society (FME, 2025). This restructuring which includes streamlining subject counts to reduce cognitive strain across all levels and introducing foundational digital literacy from Primary Four is a commendable philosophical pivot toward competency-based instruction. However, the ambition of this visionary design confronts a stark systemic reality. The success of any educational reform rests not merely on the quality of its blueprint, but on the capacity of the implementing system. The core argument of this analysis therefore is that while the curriculum design (the instruction manual for swimming) is progressive, its immediate, large-scale implementation is fundamentally undermined by the critical absence of prerequisite resources, particularly trained specialist teachers and adequate physical infrastructure (the empty pool and the uncertified instructors especially in digital literacy and vocational subjects). This significant misalignment between the intended curriculum and the delivery mechanism is defined here as ***Teaching and Learning Swimming without Water***. Such an exercise, while politically appealing, risks becoming a costly superficial change; a paper tiger that fails to deliver genuine learning outcomes (Athena Centre, 2024).

Instructional Technology as the Lens for Critique

This research utilizes established principles of Instructional Design (ID) to move beyond a simple critique of resource scarcity, offering a structural diagnosis of the policy failure. The analysis employs the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) and the core concept of Curricular Alignment as frameworks for evaluation (Florida State University, 1970s; Instructional Design Central). Instructional Technology provides the critical lens needed to evaluate the coherence between the desired learning outcomes and the available instructional materials, assessment mechanisms, and teacher capacity. The ensuing discussion will demonstrate that the current implementation strategy reflects a systemic breakdown that demands urgent, technology-driven remediation to bridge

the capacity gap and ensure that the practical skills mandated by the curriculum can actually be acquired.

The Vision of the Reform: Designing a Future-Ready Curriculum

The revised framework signals a crucial shift in pedagogical philosophy. The Federal Ministry of Education and its partners successfully reduced the number of subjects in primary, secondary and technical schools, aiming to reduce content overload and create more time for deeper learning. For example, Senior Secondary School (SSS) students are now expected to take 8 to 9 subjects, with a sharper focus on five core areas, including core general courses and one trade subject (FME, 2025 ; Premium Times, 2024). At the primary level, early years (Primary 1 to Primary 3) are spared unnecessary breadth, allowing teachers to consolidate foundational literacy and numeracy (NERDC 2025). The reorganization of content strongly suggests a deliberate move from breadth where curriculum emphasized content coverage and rote memorization toward depth, focusing on mastery and applied competency. This emphasis is evident in the inclusion of Digital Technologies as a compulsory subject at the SSS level, signaling that technological literacy is no longer an elective but a fundamental requirement for all graduates, regardless of their specialization (Sciences, Humanities, or Business) (Premium Times, 2024;). This policy shift places an immediate and enormous demand on the educational system to transition pedagogy from theoretical instruction to practical, applied competence.

The Mandate for Practical Skills

Perhaps the most significant element of the reform is the enforced integration of practical and future-ready trade subjects. At the Senior Secondary level, every student is required to take one core trade subject from a list of options. This list includes highly specific, technical, and high-demand skills, such as Solar PV Installation and Maintenance, Fashion Design and Garment Making, Livestock Farming, Beauty and Cosmetology, Computer Hardware and GSM Repairs, and Horticulture and Crop Production (FME, 2025; Premium Times, 2024). These subjects are vocationally oriented and demand practical, hands-on instruction. For instance, achieving competency in Solar PV Installation requires detailed training in power systems fundamentals, component sizing, energy auditing, system configuration (e.g., AC/DC setups, parallel and hybrid connections), and rigorous safety practices. Similarly, Digital Technologies and Computer Hardware Repairs require intricate, sequential instruction supported by functional equipment. The implementation schedule, commencing at the start of each three-year education cycle (P1, P4, JSS1, and SS1) in the 2025/26 academic year demands rapid, system-wide mobilization of resources and personnel capable of delivering this specialized content.

The Implementation Abyss: Systemic Deficits Undermining Pedagogy

The ambitious goals of the curriculum reform are severely compromised by enduring quantifiable deficits in educational infrastructure and human capacity. The chasm between design aspiration and implementation reality constitutes the ***No Water*** scenario, wherein the intended practical outcomes are impossible to achieve across the majority of Nigerian schools.

The Infrastructure Chasm: Learning Without Labs

A fundamental barrier to implementing the new, practical curriculum is the pervasive infrastructure deficit across the Nigerian educational system. Studies consistently point to inadequate funding, poor infrastructural facilities, and unconducive learning environments as major challenges impeding effective curriculum delivery (Obi et al., 2024; FME, 2019). The specialized vocational and technical subjects, such as Information and Communication Technology (ICT) and the new trade subjects, require substantial investment in dedicated laboratories, sophisticated equipment, and reliable facilities that most government schools currently lack (Akinlami, 2024). The situation is particularly dire in technical institutions where existing infrastructure is often described as ***pitiful*** with workshops equipped only with machinery that is either obsolete or grounded, severely limiting the ability of students to acquire necessary skills through practical application (Ojimba, 2012). The detailed requirements for subjects like Solar PV Installation illustrate the financial burden and logistical complexity involved. Trainers require specific, dedicated space for tool storage, workbenches, component testing, and mock-up plumbing or wiring systems. While the National Board for Technical Education (NBTE) specifies comprehensive equipment lists for trades (e.g., Solar PV Installation guidelines start on page 95 of relevant NBTE documentation, and Computer Hardware Repairs on page 167), the capital required to meet these standards is generally prohibitive for mainstream secondary schools, especially in rural and underserved areas. When physical resources are absent, instructional delivery inevitably defaults to theoretical rote learning, note-taking, and lecture-based models (Obi et al., 2024; Ojimba, 2012). This default mode entirely bypasses the practical skill acquisition mandated by the new curriculum. A significant consequence of this disparity is the reinforcement of a two-tier educational system: resource-rich private schools may manage to absorb the high costs and provide the required hands-on training, while the vast majority of students in public schools are confined to learning the theory of Solar PV installation or computer maintenance without ever touching the equipment. This ensures that a curriculum intended to promote skill development inadvertently reinforces social and economic inequities in access to practical competence.

The Teacher Capacity Crisis: Expertise without Trainers

The human resource capacity deficit poses an equally critical, if not greater, challenge to the success of the reform. Nigeria faces a profound teacher shortage, with only 915,000 teachers serving 31.8 million pupils. This results in a national teacher–pupil ratio of more than 1:35, substantially exceeding the UNESCO recommended benchmark of 1:25 (Athena Centre, 2024). Exacerbating this shortage is the qualitative deficit: a scarcity of qualified professional teachers generally (FME, 2019), which is particularly acute in technical and vocational related programs (Mkpa, 2005; Ojimba, 2012). The challenge of recruiting and retaining specialists is compounded by the ambitious new subjects. For instance, the introduction of compulsory Digital Technologies is undermined by evidence showing that fewer than 50% of public school teachers possess basic ICT skills (Athena Centre, 2024). Furthermore, the sudden national

rollout and perceived lack of meaningful consultation with key stakeholders, including teachers have left many schools and teachers unprepared for implementation (Alausa & Ahmad, 2025). Teachers are forced to adopt and implement new classroom practices and pedagogies they are not trained for, leading to frustration and superficial adherence to the new syllabus. When a curriculum demands practical, adaptive, and skill-focused pedagogy, but teachers lack the foundational subject matter expertise and pedagogical skills, the consequence is the substitution of genuine learning with perfunctory compliance (Athena Centre, 2024). Teachers who are ill-equipped to teach high-tech subjects like Solar PV Installation or Computer Hardware Repairs are compelled to rely solely on textbooks, leading to the ***paper tiger*** effect where the curriculum exists robustly on paper but lacks effective implementation in the classroom (Obi et al., 2024; UNICEF, 2018). The systemic inability to train and deploy specialized technical and vocational education and training (TVET) teachers becomes the greatest impediment to realizing the goals of practical skills acquisition (Ojimba, 2012).

The ADDIE Critique: A Failure in the Analysis Phase

The ADDIE Model (Analysis, Design, Development, Implementation, Evaluation) provides the standard framework for designing effective instruction (Florida State University, 1970s). While the Nigerian reform demonstrated strength in the Design phase articulating visionary objectives and modern content, the analysis reveals a critical flaw originating in the Analysis phase. The Analysis phase mandates the identification of the instructional problem, the establishment of goals, and crucially, the assessment of the learning environment, including existing constraints, learner characteristics, and available delivery options. In the Nigerian case, the decision-makers failed to accurately map the ground reality, the profound lack of physical facilities and the extensive teacher deficit against the highly aspirational goals of the new curriculum. This disconnect ensures that the policy, while politically laudable for its vision of global alignment, was never truly feasible for mass Implementation across a resource-constrained environment. The failure to conduct a robust context-sensitive needs assessment during the Analysis phase resulted in a curriculum blueprint that ignores the foundational capacity constraints required for practical skill delivery. An effective ID process mandates that resource limitations identified in the Analysis phase must constrain or modify the content defined in the Design phase. By neglecting this critical alignment, the system guarantees an unachievable level of quality at the Implementation stage, rendering the entire reform exercise significantly less effective in improving learning outcomes

The Curricular Alignment Breakdown: Objectives, Resources, and Assessment

The principle of Curricular Alignment dictates that learning outcomes, acceptable evidence (assessment), instructional materials, and learning activities must correspond tightly to ensure students achieve intended learning goals. The current reform exhibits a catastrophic breakdown in this alignment. For example, consider the learning outcome: Students will be able to design and size solar photovoltaic power systems correctly and demonstrate safe working practices. Achieving this outcome necessitates the corresponding instructional activities, such as hands-on practice in system configuration and testing using real components in a functioning

laboratory. However, where workshops are absent, instructional activity defaults to lecture-based delivery (Ojimba, 2012; Obi et al., 2024). This misalignment presents a dilemma for assessment: either the final evaluation must ignore the practical skills (thereby not measuring the true intended learning outcome), or the assessment will be impossible for the majority of students to pass, demonstrating a system-level failure to teach the necessary skills. This structural flaw highlights why a new curriculum alone cannot transform learning if the delivery system's capacity is ignored.

Instructional Technology Solutions: Phased Remediation Strategies

To constructively address the challenge of delivering practical skills in the absence of traditional infrastructure, Instructional Technology gadgets could be strategically deployed as a critical infrastructure substitute and a scalable tool for human capacity building. Consider the following strategies below:

i. **Compensating for Infrastructure Deficit through Virtualization:** Given the pervasive lack of functional laboratories and workshops for high-cost subjects like Solar PV Installation and Computer Hardware Repairs, technological compensation is required. Educational Resource Centers (ERCs) can be strategically repositioned to function as decentralized hubs, providing advanced teaching aids and multimedia resources that compensate for limited facilities at the school level (Saula, 2024). However, for true scale and accessibility, solutions must reach the individual classroom.

   For complex, high-risk, or expensive subjects, Virtual Learning Environments (VLEs) and simulation software offer a viable path to deliver essential practical experiences without requiring physical equipment (Adepoju & Afolabi, 2016). Students can practice sequencing, component identification, troubleshooting electrical faults, and complex assembly tasks in a low-risk, repeatable virtual lab. Investing in the development of local, context-specific simulation software tailored to the six core trade subjects would provide a necessary, scalable ***simulated pool*** where students can acquire fundamental ***swimming*** skills. While EdTech deployment faces known challenges in Nigeria, including financial constraints, unstable internet access, and a lack of technical know-how (Ogolodom et al., 2021; Badri et al., 2013), mitigation is possible through thoughtful design. Solutions must prioritize low-bandwidth delivery, utilizing mobile learning applications and local server storage to ensure accessibility and flexibility, particularly for marginalized and rural populations. The strategic leverage of technology can alleviate the heavy academic load and compensate for limited facilities across diverse educational settings.

ii. **Scalable Teacher Professional Development (PD):** The existing teacher deficit, both quantitative (ratio) and qualitative (specialist skills), necessitates a radical rethinking of professional development (PD). Traditional face-to-face training models are too slow and expensive to address the national shortage of specialist technical trainers (World Bank, 2023).

Technology-aided structured pedagogy offers a scalable solution. EdTech platforms can be used to deliver customized, continuous professional learning, which is critical for the long-term sustainability of the reform (World Bank, 2023). Specifically, instructionally designed electronic scripts and short video modules, delivered via handheld devices or local learning management systems (LMS), can standardize content delivery (Bridge International Academies, 2023). These tools guide teachers step-by-step through practical lessons, compensating for immediate gaps in pedagogical or specialized subject matter expertise. This model has shown efficacy and cost-effectiveness in developing countries for boosting learning gains provides essential platform for unqualified teachers. Furthermore, Professional Development must utilize principles of active adult learning, promoting self-reflection and connection with new ideas. Adaptive learning platforms can customize training experiences, delivering content in small, digestible microlearning increments tailored to the teacher's existing skill level and specific instructional needs. This approach ensures that the systemic quality of instruction is standardized nationwide while providing the necessary support for teachers to adopt and refine new instructional strategies, transitioning them from merely reading scripts to actively mastering the material.

iii. **Phased Implementation and Resource Alignment:** A critical lesson derived from reform failures across Eastern and Southern Africa is that curriculum change should never exceed the capacity of the education system to deliver (UNICEF, 2018). The immediate, comprehensive national rollout is inherently risky. A phased, data-driven implementation model is warranted. The government should move away from instantaneous national deployment and adopt a pilot-test, evaluate, and scale approach. Initial efforts should concentrate on consolidating foundational competencies (literacy and numeracy) (UNICEF, 2018) while concurrently rolling out the compulsory Digital Technologies curriculum using low-cost simulated environments, as this subject has the widest application benefit. High-cost trade subjects, which require significant material inputs (e.g., Solar PV and Fashion Design), should be initially concentrated in strategically located, fully equipped cluster schools, polytechnics, or Educational Resource Centers. These clusters, accessible to multiple secondary schools via planned transportation systems, allow for the maximization of scarce high-value resources and expertise until localized capacity across all schools can be demonstrably built. This approach acknowledges the fiscal reality while ensuring that practical instruction occurs somewhere, rather than superficial theoretical instruction occurring everywhere.

Policy Recommendations and the Road Map for Capacity Building

The long-term success of the Nigerian new curriculum reform requires strategic policy intervention guided by instructional system principles, focusing on sustainable capacity development. These include:

i. **Strategic Financial and Human Resource Allocation:** The education sector requires a non-negotiable financial commitment for the realization of this reform. Policy should

mandate ring-fenced funding dedicated specifically to teacher recruitment, training, and recurrent costs for technical training infrastructure and maintenance. Currently, public expenditure in education is often dominated by salaries, leaving negligible funds for infrastructure development and capacity building (World Bank, 2023; FME, 2019). The government must commit a higher proportion of its budget, dedicated to purchasing, maintaining, and upgrading technical education equipment. To address the severe human capacity crisis, a national salary and incentive framework should be implemented to ensure competitive pay for teachers, particularly specialists in TVET fields. Targeted rural deployment packages, including housing and hardship allowances, are necessary to attract the specialized technical expertise needed in underserved areas. Furthermore, a dedicated national teacher taskforce should be established to monitor recruitment, welfare, and teacher engagement with the new curriculum, ensuring accountability in capacity development.

ii. **Public-Private Partnerships for Resource Sharing:** The private sector currently shoulders a significant portion of Nigeria's education delivery burden. The government should desist from sidelining or heavily taxing private institutions to actively engaging them as critical partners in reform. A formal mechanism for Public-Private Partnerships (PPPs) should be established to facilitate resource sharing. This includes developing contracts that allow public secondary schools access to the specialized workshops, labs, and modern equipment owned by private technical institutions, private vocational firms (e.g., solar installation companies, fashion houses), or Educational Resource Centers. This strategic alignment offers an immediate, cost-effective bypass of the existing infrastructure deficit, ensuring that students can access the necessary ***water*** for practical skill instruction even while the system builds its own capacity.

iii. **Mandatory Evaluation and Data-Driven Implementation**: Implementation success requires moving beyond anecdotal reports to mandatory, continuous, and transparent formative evaluation. The evaluation mechanism must utilize the data capture capabilities inherent in EdTech platforms (LMS, VLEs) to monitor instructional quality, teacher engagement with PD modules, and student performance on simulated practical tasks. This continuous feedback loop, guided by clear success metrics established during the design phase will provide policymakers with immediate, granular data to identify implementation bottlenecks, troubleshoot resource discrepancies, and guide targeted resource allocation in real-time. By prioritizing system-wide data collection and evaluation, the reform can shift from a static paper document to a dynamic, responsive intervention that adapts to the ground realities of capacity constraints.

Conclusion

The Nigerian curriculum reform is an important and visionary declaration of intent, setting out to equip the nation's youth with 21st-century skills necessary for the modern economy (Alausa & Ahmad, 2025). Yet, the current approach to implementation, mandating high-cost, high-skill

subjects like Solar PV Installation and Computer Hardware Repairs without securing the foundational infrastructure and specialized human capital amounts to the ineffective process of attempting ***Teaching and Learning Swimming without Water.*** The analysis, guided by Instructional Design principles, reveals that the implementation deficit stems from a critical failure in the Analysis phase of the reform process: a fundamental misalignment between ambitious design and systemic delivery capacity. To escape the cycle of ambitious reforms yielding poor outcomes, Nigeria must embrace a paradigm shift. Instructional Technology offers the crucial strategic options needed to compensate for immediate resource deficits. By strategically deploying virtual laboratories and simulations, adopting scalable, structured, and adaptive professional development via EdTech, and committing to a phased, cluster-based rollout model, the system can begin to bridge the capacity gap. This combination of technology-aided pedagogy and sustained political commitment will ensure that the ambition of the new curriculum reform translates into genuine, measurable, and equitable practical competence for Nigerian learners.

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