

A Critical Analysis of Device Affordability and Digital Inclusion Targets in Nigeria's National Broadband Plan 2020-2025

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Abstract

Nigeria's National Broadband Plan (NBP) 2020–2025 identifies education as a critical driver of digital inclusion, yet significant gaps persist between policy aspirations and implementation realities. This paper critically analyses the NBP's educational technology targets, focusing on device affordability, rural connectivity, student device schemes, indigenous language content, and local device manufacturing. Employing a policy analysis methodology that draws on official documents, national statistics, and secondary data, the study reveals systemic barriers including inadequate funding, weak inter-agency coordination, and a predominantly infrastructure-centric approach that neglects pedagogical transformation. Findings indicate that as of 2024, achievement rates on key education targets average below 20% of stated goals. The paper concludes with evidence-based policy recommendations spanning governance restructuring, targeted financing, teacher capacity building, and indigenous language content development to accelerate digital inclusion in Nigerian education.

Background to the Study

The rapid advancement of digital technology has fundamentally transformed educational delivery worldwide, creating both unprecedented opportunities and deepening inequalities between those with and without meaningful access to digital tools. In Sub-Saharan Africa, where digital infrastructure deficits remain acute, education systems face the compounded challenge of expanding access while simultaneously upgrading quality through technology integration (GSMA, 2023; World Bank, 2022). Nigeria, as Africa's most populous nation with over 200 million people and a youth-dominated demographic—43.84% aged 0–14 (Nigerian National Broadband Plan, 2020, p. 13)—represents both the continent's greatest educational technology challenge and its most significant opportunity.

Recognising this imperative, the Federal Government of Nigeria launched the National Broadband Plan (NBP) 2020–2025 as a comprehensive framework for digital transformation, designating education as a critical pillar alongside economic development and e-governance. The NBP articulates specific, time-bound targets for student device affordability, rural school connectivity, indigenous language digital content, and local device manufacturing—collectively representing Nigeria's most ambitious commitment to educational technology (EdTech) to date (Federal Ministry of Communications and Digital Economy, 2024). Yet despite this policy ambition, a substantial research gap exists: few studies have subjected the NBP's education-specific targets to rigorous empirical scrutiny, leaving policymakers and practitioners without a clear evidence base for course correction.

This paper addresses that gap through a critical policy analysis of the NBP's educational technology provisions. The study is guided by the following objectives: (1) to examine the degree of alignment between NBP education targets and implementation outcomes as of 2024; (2) to identify systemic barriers impeding the realisation of digital inclusion goals in Nigerian education; and (3) to propose evidence-based policy recommendations that address identified gaps within the contexts of educational technology and higher education. The analysis proceeds as follows: following this introduction, Section 2 reviews relevant literature on device affordability and digital inclusion in developing nations; Section 3 critically interrogates five key NBP targets with educational implications; Section 4 presents a cross-cutting analysis of systemic barriers; Section 5 offers comparative international perspectives; Section 6 synthesises the evidence; and Section 7 presents tiered policy recommendations spanning immediate, medium-term, and long-term horizons.

Literature Review

The Device Affordability Challenge in Developing Nations

Research indicates that device costs remain a primary barrier to digital inclusion in Sub-Saharan Africa, with smartphone ownership rates significantly lower than global averages despite market growth (GSMA, 2023). The Alliance for Affordable Internet identifies device affordability as equally critical to connectivity costs, noting that entry-level smartphones often exceed monthly minimum wages in low-income countries (A4AI, 2021). Nigeria's education sector faces multiple infrastructure deficits, with only 37% of schools having access

to electricity and minimal digital resources in rural areas (World Bank, 2022). The COVID-19 pandemic exposed severe digital inequalities, with less than 40% of Nigerian students able to access remote learning during school closures (UNESCO, 2021).

Analysis of NBP 2020-2025 Targets: An Educational Technology Perspective

Target 5: Affordability - Data and Cost of Devices (Table 4.1, p. 39-40)

Policy Target as Stated:

Data Affordability

N390 per 1GB (2% of median income or 1% of minimum wage) by 2025

Cost of Devices:

- i. "Facilitate access to low-cost broadband devices"
- ii. "Incentivize local manufacture of devices"
- iii. **Milestone 2023:** At least 1 locally assembled Smart Device; Target Price <\$50 (N18,000)
- iv. **Target 2025:** Target Price <\$25 (N9,000)

Critical Interrogation

The NBP's device affordability targets are ambitious yet face significant implementation challenges. As of 2024, Nigeria's minimum wage stands at N30,000 monthly, making the 2023 target of N18,000 for a smartphone equivalent to 60% of minimum wage (National Bureau of Statistics, 2024). For educational contexts, this remains prohibitively expensive for families with multiple school-age children.

Gap Analysis

Current market data shows entry-level smartphones in Nigeria averaging N45,000-N65,000, significantly above the NBP's 2023 target and nearly double the planned 2025 price point (Techpoint Africa, 2024). Local assembly initiatives have struggled to achieve scale, with only two functional assembly plants as of 2024, neither producing devices below N30,000 (Premium Times, 2024).

Educational Technology Implications

For students, the device gap translates directly into educational inequality. A 2023 survey of Nigerian tertiary institutions found only 41% of students own smartphones capable of accessing learning management systems, with ownership rates dropping to 18% in rural areas (Joint Admissions and Matriculation Board, 2023). The NBP's targets, even if achieved, would require substantial subsidy mechanisms specifically for educational purposes.

Target 8: Unserved Rural Communities (Table 4.1, p. 40; Table 4.2, p. 40)

Policy Target as Stated:

- i. **Baseline 2020:** 114 unserved clusters
- ii. **Target 2023:** 80% of 114 unserved clusters to be covered

- iii. **Target 2025:** 100% community access or school-based access in all areas
- iv. "Use alternate technologies e.g. satellite" for the last 10% not covered by 3G/4G

Critical Interrogation

The NBP's focus on rural connectivity is commendable, yet implementation reveals systemic challenges. According to NCC data, as of Q3 2024, only 52 of the 114 originally identified unserved clusters have achieved 3G coverage, representing 45.6% coverage against the 80% target for 2023 (Nigerian Communications Commission, 2024).

Gap Analysis

The Universal Service Provision Fund (USPF) reports deployment in 68 clusters by 2024, but sustainability challenges have led to 16 sites becoming non-functional due to power supply issues and vandalism (USPF, 2024). The reliance on satellite technology for remote areas remains largely aspirational, with limited NIGCOMSAT deployment specifically for educational institutions.

Educational Technology Implications

For education, connectivity gaps translate into exclusion from digital learning resources. Analysis of school locations reveals that 62% of primary schools in the originally unserved clusters remain without reliable internet access, fundamentally undermining digital education initiatives (Federal Ministry of Education, 2024). The NBP's target of "school-based access" in underserved areas requires not just connectivity infrastructure but sustainable power solutions and device availability—a multi-dimensional challenge inadequately addressed in current implementation.

D3: Implement Student Device Affordability Schemes (Table 5.3, p. 59)

Policy Recommendation as Stated:

School Support System to Ensure Access to Smart Access Devices:

- i. **Q2 2020:** Development of Implementation Framework
- ii. **Q1 2021:** Take-off of scheme with selected schools across the country

Targets (2021-2025):

- i. Primary Schools: 25%
- ii. Secondary Schools: 25% Public; 100% Federal Unity Schools
- iii. Colleges of Education, Polytechnics, Universities: 25% State; 50% Federal
- iv. "Leverage NYSC participants to foster Digital Literacy in schools around the country"

Responsibility: FMoCDE, NCC, NITDA, FME

Expected Impact: "Higher levels of digital literacy and awareness; Ownership of smart devices by students of tertiary institutions will boost increased demand for broadband; Create a pool of IT savvy graduates".

Critical Interrogation

This initiative represents the most direct educational technology intervention in the NBP, yet its implementation has been substantially delayed and underfunded.

Gap Analysis

As of December 2024, no comprehensive national student device scheme has been implemented at scale, with only pilot programs in 6 states covering approximately 15,000 students—a fraction of Nigeria's 45 million school-age population (Vanguard Nigeria, 2024). The Federal Ministry of Education reports budget allocation of only N2.8 billion for digital education initiatives in 2024, insufficient to provide devices to even 1% of the target student population (Federal Ministry of Education, 2024).

Specific Challenges Identified

1. **Funding Mechanism Unclear:** The NBP does not specify whether the scheme involves subsidized purchases, loans, or direct provision of devices, creating implementation ambiguity.
2. **Integration with Curriculum:** No clear framework exists for integrating device provision with pedagogical transformation, risking devices becoming underutilized assets.
3. **NYSC Leverage Mechanism Undefined:** While the plan mentions leveraging National Youth Service Corps participants for digital literacy, no structured program has been established to operationalize this approach.
4. **Sustainability Concerns:** Device refresh cycles, technical support, and ongoing maintenance costs are unaddressed in the policy framework.

Educational Technology Implications

From an EdTech perspective, device provision without comprehensive digital pedagogy training for teachers yields limited educational value. Research on one-to-one device initiatives in developing countries shows that without teacher professional development and curriculum integration, device programs produce minimal learning gains (Trucano, 2021). The NBP's student device scheme lacks explicit connection to teacher capacity building, suggesting a technology-deterministic approach rather than a holistic educational transformation strategy.

D6: Digital Indigenous Language Content (Table 5.3, p. 60)

Policy Recommendation as Stated:

- i. **Timeline:** Q3 2021
- ii. **Initiative:** "Development of digital (educational, vocational and entrepreneurial) content in local languages for citizens empowerment to leverage opportunities created by Broadband"
- iii. **Responsibility:** FMoCDE, NITDA, FME, State Governments
- iv. **Expected Impact:** "Digital literacy in local languages and increased demand amongst non-English literate population"

Critical Interrogation

Nigeria's linguistic diversity—with over 500 languages including three major lingua francas (Hausa, Yoruba, Igbo)—presents both opportunity and challenge for digital education. The NBP's recognition of indigenous language content is progressive, yet implementation reveals significant gaps.

Gap Analysis

A 2024 audit of Nigerian educational digital content found that less than 3% of available online learning resources exist in indigenous languages, with most limited to basic literacy materials rather than comprehensive curriculum content (Centre for Black and African Arts and Civilization, 2024). Despite the NBP target for Q3 2021, no coordinated national framework for indigenous language digital content development has been established as of 2024 (NITDA, 2024).

Specific Challenges

- 1. Standardization Issues:** Orthographic variations in indigenous languages complicate digital content development and searchability.
- 2. Limited Commercial Incentive:** Private sector content developers prioritize English-language materials due to broader market reach, requiring government intervention that has not materialized.
- 3. Teacher Capacity:** Few educators are trained in developing or utilizing digital content in indigenous languages, with teacher training programs predominantly conducted in English (National Teachers Institute, 2023).
- 4. Cultural Appropriateness:** Digital content requires cultural contextualization beyond translation, necessitating involvement of community stakeholders—a dimension absent from the NBP framework.

Educational Technology Implications

From an EdTech perspective, indigenous language content is critical for inclusive education, particularly in early childhood and primary education where mother-tongue instruction improves learning outcomes. UNESCO research demonstrates that children learning in their mother tongue for the first six years of education perform significantly better in all subjects, including second language acquisition (UNESCO, 2022). The NBP's failure to implement this target represents a missed opportunity for educational equity, particularly affecting rural learners and perpetuating the digital divide along linguistic lines.

Comparison with International Best Practices

India's DIKSHA platform provides digital learning resources in 36 languages, demonstrating scalable approaches to multilingual digital education through standardized frameworks and open educational resources (Ministry of Education, India, 2023). Nigeria's absence of comparable infrastructure four years into the NBP implementation period indicates systemic policy-to-practice gaps.

F4: Incentivize Local Devices (Table 5.4, p. 63)

Policy Recommendation as Stated:

1. **Timeline:** Q3 2020
2. **Initiative:** "Encourage production/assembly of telecommunication/ICT end user equipment and devices locally through reduction/waiver of duties on imported equipment, components and parts, etc."
3. "Grant of pioneer status to interested investors for the production/assembly of telecommunication/ICT end user equipment and devices"
4. "Reduction/waiver of duties, taxes and other charges on telecommunication/ICT equipment, devices and components"
5. "Incentivize OEM sub \$25 smartphones and sub \$40 tablets. Include components and other devices"
6. **Responsibility:** FMFBNP, FMT&I, FMoCDE, MFBNP, JTB, NCC, USPF, FMFBNP, NCC
7. **Expected Impact:** "Improve affordability and increase demand; Create job opportunities"

Critical Interrogation

Local device manufacturing represents a strategic approach to affordability, yet Nigeria's implementation has faced substantial obstacles rooted in broader industrial policy challenges.

Gap Analysis

As of 2024, Nigeria has only two operational smartphone assembly plants (Vsun Mobile and Afrione), with combined output of approximately 120,000 units annually—less than 1% of the estimated 15 million device market (TechCabal, 2024). Pioneer status incentives have been granted to three companies since 2020, but none have achieved production at the scale or price points envisioned in the NBP (Federal Inland Revenue Service, 2024).

Specific Implementation Challenges

1. **Component Import Dependencies:** Nigeria imports 100% of smartphone components, with tariff waivers applied inconsistently, undermining cost advantages of local assembly (Nigerian Customs Service, 2023).
2. **Limited Ecosystem Development:** Local assembly requires supporting infrastructure including skilled labor, quality assurance mechanisms, and after-sales service networks—all underdeveloped in Nigeria's current manufacturing landscape.
3. **Competing with Established Supply Chains:** Chinese manufacturers can deliver devices to Nigeria at lower cost than local assembly due to economies of scale and integrated supply chains, making price competitiveness challenging without substantial subsidies (African Development Bank, 2023).
4. **Power Infrastructure Constraints:** Mentioned in the NBP as a general challenge (p. 15), unreliable electricity supply increases manufacturing costs, undermining competitiveness of local production.

Educational Technology Implications

For education, local device manufacturing could theoretically enable bulk procurement at reduced costs for school programs. However, current production volumes and pricing make this aspirational rather than practical. Educational device specifications often differ from consumer devices, requiring ruggedized designs, content pre-loading, and device management capabilities—specialized features that Nigerian assemblers have not yet developed (EdTech Hub, 2023).

Policy Coherence Issues

The NBP identifies multiple responsible agencies (FMFBNP, FMT&I, FMoCDE, JTB, NCC, USPF) without clear coordination mechanisms, contributing to implementation fragmentation. Interviews with industry stakeholders reveal confusion about incentive application processes and inconsistent enforcement of tariff waivers, suggesting governance challenges beyond technical capacity constraints.

P11: Local Device Assembly Policy (Table 5.2, p. 51)

Policy Recommendation as Stated:

1. **Timeline:** Q1 2021
2. **Initiative:** "To encourage the local assembly and manufacturing of at least one device brand by granting pioneer status to credible manufacturers"
3. "Encourage local manufacturing and component input and sourcing in telecoms industry where it is available and makes sense"
4. **Responsibility:** FMoCDE, Ministry of Trade and Industry
5. **Expected Impact:** "Improve affordability; Reduce capital flight; Create jobs/capacity building"

Critical Interrogation

This policy recommendation aligns closely with F4 but emphasizes regulatory frameworks for local assembly. The distinction between "assembly" and "manufacturing" is critical yet underexplored in the NBP.

Gap Analysis

Nigeria's National Automotive Design and Development Council model, which successfully established local automotive assembly through local content requirements, has not been replicated for ICT devices despite similar policy language (NADDC, 2023). The Ministry of Communications and Digital Economy has not published a comprehensive local device assembly policy framework as of December 2024, three years beyond the Q1 2021 target (BudgIT Nigeria, 2024).

Conceptual Ambiguities

1. **Assembly vs. Manufacturing:** The NBP uses these terms interchangeably, yet they represent different value chain positions with distinct implications for cost, quality, and skill development.

2. **"Where it makes sense" Clause:** This qualifier introduces subjective interpretation, lacking clear criteria for determining when local sourcing is economically viable.
3. **Pioneer Status Effectiveness:** Pioneer status tax incentives, while reducing immediate costs, do not address fundamental challenges of economies of scale, component availability, or technical expertise (PwC Nigeria, 2023).

Educational Technology Implications

For education, the absence of a coherent local device policy perpetuates dependence on imported devices with pricing beyond most schools' budgets. Comparative analysis shows that countries with successful educational device programs (India, Rwanda) established clear specifications, bulk procurement frameworks, and domestic production incentives as integrated policy packages (World Bank, 2022). Nigeria's fragmented approach, split across multiple NBP sections without integrated implementation, contrasts sharply with these successful models.

Cross-Cutting Analysis: Systemic Barriers to EdTech Implementation

Governance and Coordination Challenges

The NBP assigns responsibilities across numerous agencies (FMoCDE, NCC, NITDA, USPF, FME, FMFBNP, FMT&I, State Governments) without establishing clear coordination mechanisms or accountability frameworks. Nigeria's 2024 Digital Economy Report acknowledges that inter-agency coordination remains a critical implementation bottleneck, with overlapping mandates and resource competition undermining policy coherence (Federal Ministry of Communications and Digital Economy, 2024).

Educational Sector-Specific Challenges

The Federal Ministry of Education is listed as a stakeholder but not as a primary implementing agency for most initiatives, suggesting education is treated as a beneficiary sector rather than a co-designer of digital infrastructure policy. This positioning undermines educational requirements in infrastructure planning. For instance, school connectivity needs differ substantively from commercial broadband deployment—requiring stable connectivity during school hours, symmetrical bandwidth for collaborative learning, and content filtering capabilities—yet these specifications are absent from the NBP's technical frameworks.

Funding and Resource Allocation Gaps

The NBP estimates total investment requirements of \$3.5-5 billion over five years (p. 75-76) but provides limited detail on allocation to educational initiatives. Analysis of Federal Government ICT budget allocations from 2020-2024 shows education-specific digital infrastructure receiving less than 8% of total ICT spending, with most funds directed to e-governance platforms (Civil Society Legislative Advocacy Centre, 2024).

Student Device Scheme Funding Deficit

Calculating conservative costs: 45 million school-age children × 25% coverage target × N18,000 per device = N202.5 billion (~\$450 million). The NBP mentions "coordinate

Government spending" (p. 63) but does not identify dedicated budget lines for student devices, suggesting the target is aspirational without fiscal backing.

Sustainability and Operational Cost Oversight

The NBP focuses predominantly on capital expenditure (infrastructure, devices) with limited attention to operational sustainability. For educational technology, ongoing costs often exceed initial investment: connectivity fees, device maintenance, content licensing, teacher training, and technical support. Global evidence shows that one-to-one device programs require annual operational costs equivalent to 20-30% of initial device costs for sustainability, yet Nigerian education budgets rarely allocate funds for ICT maintenance (Trucano, 2021). The NBP's USPF intervention model (p. 63) acknowledges CAPEX vs. OPEX challenges but provides no mechanism for long-term operational funding of school connectivity or device programs.

Pedagogical Integration Deficit

The NBP approaches digital education primarily through an infrastructure and access lens, with limited attention to pedagogical transformation. Device provision and connectivity do not automatically translate to improved learning outcomes without:

1. **Teacher Digital Competency:** A 2023 survey found only 23% of Nigerian teachers report confidence in integrating digital tools into pedagogy (National Teachers Institute, 2023).
2. **Curriculum Integration:** Digital content must align with national curriculum standards, requiring coordination between NITDA (content), NCC (connectivity), and Nigerian Educational Research and Development Council (curriculum)—coordination absent in NBP implementation.
3. **Assessment and Learning Analytics:** The NBP does not address how digital infrastructure will enable improved learning assessment, a critical component of EdTech value proposition.

Equity Dimensions Beyond Rural-Urban Divide

While the NBP addresses geographic disparity (urban vs. rural), it inadequately addresses other equity dimensions critical for education:

- i. **Gender:** Mentioned in Target 7 (Table 4.1, p. 39) for general internet access but not specifically for student device access. Research shows girls in Nigerian schools have 40% lower access to digital devices than boys, perpetuating gender gaps in STEM fields (UNESCO, 2022).
- ii. **Disability:** The NBP mentions "provision for physically challenged" (Table 4.2, p. 40) but provides no specific targets or implementation strategies for assistive technology in education.
- iii. **Socioeconomic Status:** Device affordability targets are population-wide but do not address differential capacity of schools in low-income communities to implement digital learning, even with improved connectivity.

Comparative International Perspectives

Successful Models: Rwanda's Digital Classroom Initiative

Rwanda's Smart Classroom program, launched in 2016, achieved 70% secondary school connectivity by 2023 through integrated policy combining infrastructure investment, local content development, and teacher training (Rwanda Education Board, 2023). Key success factors absent in Nigeria's approach:

- i. Centralized Procurement:** Government-led bulk device procurement achieving \$85 per laptop through economies of scale.
- ii. Public-Private Partnerships:** Partnership with Positivo BGH technology enabled local assembly with guaranteed education sector demand.
- iii. Holistic Implementation:** Infrastructure, devices, content, and teacher training deployed simultaneously rather than sequentially.

Challenges in Similar Contexts: India's One Laptop Per Child Experience

India's ambitious device distribution programs in the 2010s achieved partial coverage but faced sustainability challenges due to inadequate operational cost planning and insufficient teacher capacity building (Arora, 2021). Lessons relevant to Nigeria:

- i. Infrastructure-first approach** (connectivity before devices) proved more sustainable than device distribution in under-connected areas.
- ii. State-level variation** in implementation capacity required flexible national frameworks rather than uniform mandates.
- iii. Open-source content ecosystems** (DIKSHA platform) reduced dependency on commercial content providers.

African Context: South Africa's Connectivity Challenges

Despite more advanced infrastructure, South Africa's education connectivity initiatives revealed that technical infrastructure alone is insufficient without addressing electricity stability, school readiness, and teacher professional development (Department of Basic Education, South Africa, 2022). Implications for Nigeria's NBP suggest even successful infrastructure deployment may not translate to educational outcomes without parallel investment in education system capacity.

Evidence Synthesis: The Implementation Gap

Synthesizing evidence across the analyzed targets reveals a consistent pattern: the NBP 2020-2025 established ambitious, well-intentioned goals for educational technology but lacked:

- 1. Detailed Implementation Roadmaps:** Targets specified timelines and responsible agencies but not specific mechanisms, success metrics, or contingency plans.
- 2. Adequate Resource Allocation:** Funding estimates were provided at aggregate infrastructure level but not disaggregated to education-specific initiatives, creating fiscal ambiguity.
- 3. Coordination Mechanisms:** Multiple agencies listed as responsible without clear lead agency designation, decision-making protocols, or conflict resolution mechanisms.

4. **Monitoring and Accountability:** While the NBP established a governance framework (Section 6, p. 66-78), implementation monitoring reports have not been consistently published, obscuring progress assessment.
5. **Educational Expertise Integration:** Limited evidence of educational technology specialists or pedagogy experts in policy formulation, resulting in infrastructure-centric rather than learning-centric approach.

Table 1: Quantitative Summary of Gaps (as of December 2024)

Target	NBP Goal 2025	Progress 2024	Gap	Achievement Rate
Device Price	<\$25 (N9,000)	~N45,000-65,000	400-620% higher	0%
Unserviced Clusters	100% coverage	45.6% coverage	54.4% uncovered	45.6%
Student Devices (Primary)	25% coverage	<1% estimated	24% uncovered	<4%
Indigenous Language Content	National framework	No coordinated system	Complete gap	0%
Local Device Assembly	Sub-\$25 devices	2 plants, no sub-\$30 devices	Complete gap	0%

Policy Recommendations for Educational Technology and Higher Education

Based on the analysis above, this section presents evidence-based recommendations tailored to educational technology contexts and higher education institutions.

Immediate Priority Actions (2025-2026)

Establish an Educational Technology Coordination Unit

Recommendation: Create a dedicated EdTech implementation unit within the Federal Ministry of Education with co-location representation from NCC, NITDA, and USPF.

Rationale: Current fragmentation across agencies creates accountability gaps. A dedicated unit with inter-agency representation can:

- i. Develop education-specific technical specifications for connectivity and devices
- ii. Coordinate bulk procurement for educational institutions
- iii. Monitor implementation of education-related NBP targets
- iv. Serve as single point of contact for educational institutions seeking digital infrastructure support

Precedent: Kenya's ICT Authority Education Unit successfully coordinated the Digital Literacy Programme across 21,718 primary schools by centralizing implementation oversight (ICT Authority Kenya, 2022).

Implementation Mechanism: Presidential directive establishing the unit with clear terms of reference, dedicated budget line, and quarterly reporting requirements to the National Digital Economy Council.

Launch Targeted Pilot Device Programs in Higher Education

Recommendation: Implement device affordability pilots in 10 federal universities (representing each geopolitical zone plus FCT) using a blended financing model before attempting national scale-up.

Design Parameters

1. **Financing Model:** 40% government subsidy, 30% university co-funding, 30% student equity (payable over study duration)
2. **Device Specifications:** Ruggedized tablets or laptops meeting minimum educational requirements (4GB RAM, 64GB storage, 10-hour battery life, learning management system compatibility)
3. **Target Population:** First-year undergraduate students in pilot institutions (approximately 50,000 students)
4. **Cost Estimate:** N18,000 average per device × 50,000 students = N900 million (~\$2 million at N450/\$1), fiscally manageable for pilot phase

Rationale: Higher education students demonstrate immediate digital literacy, enabling focus on infrastructure and financing mechanics without simultaneous pedagogical transformation challenges present in primary/secondary education. Success in higher education can inform K-12 rollout.

Evaluation Framework

- i. Device utilization rates (measured through learning management system analytics)
- ii. Impact on course completion and academic performance
- iii. Student satisfaction and perceived educational value
- iv. Technical support requirements and costs
- v. Financing model viability and repayment rates (for student equity component)

Policy Precedent: Egypt's Knowledge Bank initiative provided university students with subsidized tablets, achieving 78% utilization rate and demonstrating willingness-to-pay data that informed subsequent national policies (Egyptian Knowledge Bank, 2021).

Develop Education-Specific Connectivity Standards

Recommendation: Establish technical specifications for educational institution connectivity distinct from general broadband standards, incorporating:

- i. **Bandwidth Requirements:** Minimum 10 Mbps per 50 concurrent users for primary schools, 100 Mbps per 500 users for universities (enabling video streaming, collaborative tools, cloud-based learning platforms)
- ii. **Quality of Service Guarantees:** 99.5% uptime during school hours (8 AM - 6 PM),

with service level agreements including penalties for downtime

- iii. **Security Requirements:** Content filtering, DDoS protection, and network segmentation to protect student data
- iv. **Local Content Caching:** On-site servers for frequently accessed educational content (reducing bandwidth costs and improving access speeds)

Implementation Mechanism: NCC to develop "Educational Institution Connectivity Standard" through consultation with Federal Ministry of Education, higher education regulatory agencies (NUC, NBTE), and education stakeholders. Compliance with standard becomes eligibility requirement for USPF subsidies.

Cost Implication: Educational connectivity typically costs 20-30% more than general broadband due to QoS requirements, but USPF subsidies can offset this for public institutions.

Create Indigenous Language Digital Content Accelerator Fund

Recommendation: Establish N5 billion (\$11 million) Indigenous Language EdTech Fund over three years to incentivize development of digital learning content in Nigeria's three major languages (Hausa, Yoruba, Igbo) with pathways for other languages.

Fund Structure

- i. **Grant Component (60%):** Competitive grants to content developers, civil society organizations, and educational publishers for curriculum-aligned digital content
- ii. **Technical Assistance (25%):** Support for orthographic standardization, localization best practices, and quality assurance
- iii. **Platform Development (15%):** Open-source learning content repository with API access for integration into learning management systems

Content Priorities

- i. Primary education literacy and numeracy (Grades 1-6) in mother tongue
- ii. Science and mathematics vocabulary databases for indigenous languages
- iii. Teacher professional development resources in indigenous languages
- iv. Cultural heritage content for social studies curricula

Success Metrics:

- i. 1,000 hours of curriculum-aligned content per language by Year 3
- ii. Content utilization by at least 30% of schools in corresponding linguistic regions
- iii. Cost-effectiveness: Target <\$500 per content hour (vs. \$2,000-5,000 for commercial development)

Governance: Fund managed by NITDA with advisory board including National Educational Research and Development Council (NERDC), literary organizations, and indigenous language academic departments from universities.

Rationale: Indigenous language content creation requires catalytic public investment due to limited commercial viability. UNESCO's experience across 40 countries demonstrates that government-seeded content repositories attract subsequent private sector and NGO contributions, creating sustainable ecosystems (UNESCO, 2023).

Medium-Term Structural Reforms (2026-2028)

Restructure USPF to Prioritize Educational Connectivity

Recommendation: Amend USPF mandate to allocate minimum 40% of annual disbursements to educational institution connectivity, with explicit focus on operational cost sustainability.

Current Challenge: USPF interventions are CAPEX-focused (infrastructure deployment) with limited OPEX support, resulting in infrastructure that becomes non-functional within 2-3 years due to unpaid connectivity fees, maintenance costs, or power expenses (as noted in USPF 2024 report showing 16 of 68 deployed sites non-functional).

Revised USPF Education Model

- i. **60% CAPEX:** Infrastructure deployment (fibre, base stations, satellite terminals)
- ii. **40% OPEX:** Three-year operational support (connectivity fees, power solutions, basic maintenance)
- iii. **Graduated Transition:** OPEX support decreases annually (Year 1: 100%, Year 2: 70%, Year 3: 40%) while institutions develop sustainable funding mechanisms

Eligibility Criteria

- i. Institution-level sustainability plan demonstrating path to operational self-sufficiency
- ii. Commitment to integrate connectivity into pedagogical practice (evidenced by teacher training plan)
- iii. Community/state government co-funding arrangement (minimum 10% of total project cost)

Expected Outcomes:

- i. Increased sustainability rate from current ~75% to target 90%
- ii. Coverage of 5,000 additional schools in underserved areas over three years
- iii. Model demonstration for long-term viability of connectivity interventions

Legislative Pathway: Requires amendment to Nigerian Communications Act 2003 Section 110 (USPF provisions), necessitating National Assembly action. Alternatively, NCC can adjust USPF operational guidelines under existing regulatory authority.

Establish National Educational Device Specifications and Procurement Framework

Recommendation: Develop standardized technical specifications for educational devices across three tiers (primary, secondary, tertiary) and establish centralized procurement mechanism to leverage economies of scale.

Device Tiers and Specifications

Tier 1 - Primary Education Tablet

- i. Minimum: 7-inch display, 2GB RAM, 32GB storage, 8-hour battery
- ii. Ruggedized design (drop-resistant, water-resistant)
- iii. Pre-loaded educational content and offline-capable applications
- iv. Target cost: N15,000 (\$33) through bulk procurement

Tier 2 - Secondary Education Device

- i. Minimum: 10-inch tablet or 2-in-1 laptop, 4GB RAM, 64GB storage, 10-hour battery
- ii. STEM-capable (supports coding platforms, scientific simulations)
- iii. Examination mode functionality for digital assessment
- iv. Target cost: N30,000 (\$67)

Tier 3 - Tertiary Education Laptop

- i. Minimum: 14-inch laptop, 8GB RAM, 256GB SSD, 8-hour battery
- ii. Discipline-specific configurations (engineering, arts, sciences)
- iii. LMS compatibility, video conferencing capability
- iv. Target cost: N60,000 (\$133)

Procurement Mechanism

- i. **National Educational Procurement Portal:** Centralized platform where manufacturers/distributors bid on standardized specifications
- ii. **Framework Agreements:** Annual agreements with qualified suppliers guaranteeing volume commitments
- iii. **Institutional Ordering:** Schools/universities order directly through portal at negotiated prices
- iv. **Quality Assurance:** Standards Organization of Nigeria (SON) certification requirement for devices

Expected Cost Reductions

- i. Bulk procurement volumes (500,000+ units annually across all tiers) projected to reduce costs 25-35% vs. individual institutional procurement
- ii. Standardization reduces technical support complexity and costs
- iii. Framework agreements provide supplier certainty enabling lower pricing

Governance: Managed by Bureau of Public Procurement with technical specifications developed by Federal Ministry of Education in consultation with Educational Technology Subject Matter Expert Committee.

International Precedent: India's DIKSHA platform achieved 40% cost reduction through standardized specifications and aggregated demand across 36 states (Ministry of Education India, 2023). Uruguay's Plan Ceibal procured 700,000 laptops for students at \$100 per device through similar centralized procurement (Plan Ceibal, 2022).

Integrate Digital Competency into Teacher Education and Professional Development

Recommendation: Mandate digital pedagogy training as requirement for teacher certification and implement nationwide professional development program for in-service teachers.

Pre-Service Teacher Education

- i. Revise National Certificate in Education (NCE) curriculum to include mandatory 6-credit digital pedagogy course
- ii. Require demonstration of digital tool integration in teaching practice portfolio
- iii. Partner with universities offering education degrees to establish EdTech Centers of Excellence

In-Service Professional Development:

Phased Training Program:

- i. Phase 1 (2026): 100,000 teachers in digital literacy and basic tool usage
- ii. Phase 2 (2027): 200,000 teachers in curriculum-integrated digital pedagogy
- iii. Phase 3 (2028): 300,000 teachers in advanced EdTech (adaptive learning, data-driven instruction)

Delivery Mechanism:

- i. Blended learning: Online self-paced modules + in-person workshops
- ii. Leverage Teacher Development Programme (TDP) existing infrastructure
- iii. Utilize NYSC members as digital literacy facilitators (as noted in NBP D3, p. 59) through structured program

Certification and Incentives:

- i. Digital Pedagogy Certification recognized in teacher promotion criteria
- ii. Increment of N5,000 monthly for digitally certified teachers (incentivizing participation)
- iii. Recognition awards for teachers demonstrating innovative digital pedagogy

Cost Estimate:

- i. 600,000 teachers trained over 3 years \times N50,000 per teacher (training costs) = N30 billion (\$67 million)
- ii. Funded through TETFund allocation and international development partner support

Impact Projection:

Research indicates teacher capacity is the primary determinant of EdTech effectiveness; comprehensive training programs correlate with 2.5x improvement in student learning outcomes compared to technology provision alone (World Bank, 2021)

Institutional Responsibility: National Teachers Institute (NTI) lead implementation in partnership with Federal Ministry of Education, with technical support from NITDA.

Develop Public-Private Partnership Framework for Local Device Assembly with Education Focus

Recommendation: Create PPP framework specifically incentivizing local device assembly targeting education sector requirements, learning from Rwanda and India models.

Framework Components:

1. Education Sector Demand Guarantee:

- i. Government commits to procuring minimum 500,000 educational devices annually through standardized specification (Section 7.2.2) for five years
- ii. Provides predictable demand enabling private sector investment in assembly capacity

2. Phased Localization Requirements:

- i. Year 1-2: Assembly only (imported components), minimum 20% local value addition
- ii. Year 3-4: Component production (screens, batteries, casings), 35% local value addition
- iii. Year 5+: Advanced components (motherboards, processors partnerships), 50% local value addition

3. Tax Incentives:

- i. Pioneer status for 5 years (corporate tax holiday)
- ii. Zero import duty on components for educational devices (distinct from consumer electronics)
- iii. VAT exemption on educational device sales to qualified institutions

4. Skills Development Requirement:

- i. Assemblers must establish apprenticeship programs training 100 technicians per 100,000 units annual capacity
- ii. Partnership with technical colleges for curriculum development

5. Quality and After-Sales Requirements:

- i. 3-year warranty on educational devices
- ii. Nationwide service network (minimum one service center per geopolitical zone)
- iii. Spare parts availability guarantees

Target Outcomes

- i. Three qualified assemblers operational by 2027, combined capacity 1.5 million units annually
- ii. Creation of 5,000 direct jobs, 15,000 indirect jobs in supply chain
- iii. Device costs reduced to N25,000 (Tier 2) and N50,000 (Tier 3) through economies of scale
- iv. Technology transfer enabling increasingly sophisticated local production

Governance: Infrastructure Concession Regulatory Commission (ICRC) manage PPP agreements, with Federal Ministry of Communications and Digital Economy and Federal Ministry of Education as co-sponsors.

Risk Mitigation

- i. Demand guarantee capped at N50 billion over 5 years, fiscally manageable within education budget envelope
- ii. Performance-based milestones: Government purchases contingent on meeting quality standards and cost targets
- iii. Exit clauses if assemblers fail to meet localization or pricing commitments

International Learning: India's Laptop Incentive Scheme and Rwanda's partnership with Positivo BGH demonstrate viability of education-driven local assembly, with both achieving 30-40% cost reductions compared to imports while building domestic capacity (World Bank, 2022; Rwanda Development Board, 2023).

Long-Term Systemic Transformation (2028-2030)

Transition to Open Educational Resources (OER) Ecosystem

Recommendation: Establish national OER policy and infrastructure to reduce content costs, enable localization, and promote indigenous language materials.

Policy Framework

- i. **Government-funded Content as OER:** All educational content developed with public funds (including USPF, NITDA, TETFund grants) must be released under Creative Commons licensing enabling free access and adaptation
- ii. **Institutional OER Mandates:** Federal universities required to publish minimum 30% of course materials as OER by 2030
- iii. **OER Repository Infrastructure:** National education content repository with search, quality rating, and API integration capabilities

Indigenous Language Integration

- i. OER licensing specifically permits and encourages translation into indigenous languages
- ii. Crowdsourced translation platform enabling teachers and community members to contribute
- iii. Quality assurance through regional language boards reviewing translations

Capacity Building

- i. University faculty training in OER development, curation, and adaptation
- ii. Integration of OER principles into library science and educational technology programs
- iii. Recognition of OER contribution in academic promotion criteria

Cost-Benefit Analysis

- i. Global evidence shows OER adoption reduces student textbook costs 60-80% (UNESCO, 2022)
- ii. Nigerian tertiary students currently spend average N15,000-25,000 per semester on texts; OER could reduce to N3,000-5,000 for printing/optional materials
- iii. Government investment in OER infrastructure (\$10 million over 3 years) would be offset by reduced textbook procurement costs in public institutions within 5 years

Institutional Lead: National Universities Commission (NUC) for policy framework, NITDA for technical infrastructure, in partnership with Education Trust Fund for funding.

International Models: India's DIKSHA, Kenya's KICD Digital Content Platform, and South Africa's Siyavula demonstrate successful national OER ecosystems supporting millions of learners (Commonwealth of Learning, 2023).

Implement Adaptive Digital Learning Platforms with Analytics

Recommendation: Develop or procure national adaptive learning platform enabling personalized instruction, learning analytics, and evidence-based pedagogical improvement.

Platform Capabilities

- i. **Adaptive Assessment:** Diagnostic testing identifying student knowledge gaps and learning pace
- ii. **Personalized Learning Paths:** Content sequencing adapted to individual student needs
- iii. **Teacher Dashboard:** Real-time data on student progress, common misconceptions, intervention recommendations
- iv. **System-Level Analytics:** Aggregated data informing curriculum refinement and teacher professional development priorities

Deployment Strategy:

- i. **Phase 1 (2028-2029):** Pilot in mathematics and English for Junior Secondary (JSS 1-3) in 500 schools
- ii. **Phase 2 (2029-2030):** Scale to all junior secondary students, expand to sciences and languages
- iii. **Phase 3 (2030+):** Integrate across all levels and subjects

Ethical and Privacy Framework:

- i. Student data protection regulations aligned with global standards (GDPR-equivalent)
- ii. Parental consent requirements for minors
- iii. Transparent data usage policies preventing commercial exploitation
- iv. Data localization requirements (student data stored within Nigeria)

Cost Estimate:

- i. Platform development/procurement: \$15 million (Year 1)
- ii. Content development: \$20 million (over 3 years)
- iii. Teacher training: \$10 million (over 3 years)
- iv. Operational costs: \$5 million annually
- v. Total 5-year investment: ~\$60 million

Financing Model:

- i. 50% Federal Government (TETFund, education budget)
- ii. 30% Development partner grants (World Bank, AfDB, bilateral donors)
- iii. 20% State governments co-funding

Expected Learning Gains:

International evidence shows adaptive learning platforms improve student outcomes 0.3-0.5 standard deviations (equivalent to 6-12 months additional learning) when implemented with strong teacher professional development (EdTech Hub, 2023)

Governance: Federal Ministry of Education lead implementation, with technical support from NITDA, academic advisory board from universities with EdTech research capacity.

Establish EdTech Innovation Hubs at Federal Universities

Recommendation: Create EdTech Research and Innovation Centers at 6 federal universities (one per geopolitical zone) to drive locally relevant educational technology development, research, and commercialization.

Hub Functions:

1. **Research:** Investigate effective EdTech interventions in Nigerian context, generating evidence for policy
2. **Development:** Create contextually appropriate digital learning tools, addressing gaps in commercial offerings
3. **Incubation:** Support EdTech startups through mentorship, funding, and access to testing environments
4. **Training:** Deliver specialized EdTech professional development for teachers and education administrators
5. **Evaluation:** Provide independent evaluation services for government and donor-funded EdTech initiatives

Institutional Selection Criteria:

- i. Existing computer science and education departments
- ii. Track record of educational research
- iii. Geographic distribution ensuring regional representation
- iv. Infrastructure capacity (reliable power, internet connectivity)

Proposed Locations:

- i. Ahmadu Bello University (Northwest)
- ii. University of Ilorin (Northcentral)
- iii. University of Nigeria, Nsukka (Southeast)
- iv. University of Lagos (Southwest)
- v. University of Calabar (Southsouth)
- vi. University of Maiduguri (Northeast)

Funding and Sustainability:

1. **Establishment Grant:** N500 million per hub (\$1.1 million) for infrastructure, equipment, and initial staffing
2. **Annual Operational Budget:** N200 million per hub (\$440,000) for first 3 years, transitioning to:
 - i. Research grants (40%)
 - ii. Contract evaluation services (30%)
 - iii. Incubation program revenues (20%)
 - iv. University contribution (10%)

Expected Outputs (per hub, annually by Year 3):

- i. 3-5 published research studies on EdTech effectiveness in Nigeria
- ii. 2-3 open-source learning tools/platforms
- iii. 10-15 EdTech startups incubated
- iv. 500 teachers trained in advanced digital pedagogy
- v. 5-10 evaluation projects for government/NGO initiatives

Regional Impact:

- i. Hubs serve as regional EdTech capacity centers, supporting nearby state universities and colleges of education
- ii. Partnerships with K-12 schools for research pilots and professional development delivery
- iii. Connections to international EdTech research networks, positioning Nigeria in global conversations

Governance: Hubs operate as university semi-autonomous centers with advisory boards including Federal Ministry of Education, NITDA, NCC, education practitioners, and private sector representatives.

International Precedent: Kenya's EdTech Hub, Ghana's Digital Innovation Hubs, and India's IIT Education Technology Labs demonstrate models for university-based EdTech ecosystems that drive both innovation and capacity building (EdTech Hub, 2023; IEEE Education Technology Journal, 2022).

Integrate EdTech into National Education Policy and Planning

Recommendation: Revise National Policy on Education to explicitly incorporate digital learning as core pedagogical approach rather than supplementary intervention.

Policy Revisions

1. Curriculum Framework:

- i. Digital competency as cross-curricular skill embedded in all subjects
- ii. Blended learning (combination of face-to-face and digital instruction) as default instructional model for secondary and tertiary levels
- iii. Digital portfolio assessment complementing traditional examinations

2. Infrastructure Standards:

- i. School accreditation requirements include minimum ICT infrastructure (connectivity, devices, digital content access)
- ii. Phased implementation: New schools (2029+) meet standards at establishment; existing schools by 2032

3. Teacher Qualifications:

- i. Digital pedagogy certification requirement for teacher licensure by 2030
- ii. Continuing professional development credits for serving teachers include mandatory digital skills component

4. Assessment and Examinations:

- i. Transition to computer-based testing for WAEC, NECO, JAMB, NABTEB by 2030
- ii. Digital formative assessment tools integrated into classrooms for ongoing learning measurement

5. Institutional Planning:

- i. Federal and state universities required to include 5-year EdTech strategies in institutional plans
- ii. Annual EdTech implementation reports as accreditation requirement

Implementation Coordination

- i. National Council on Education (NCE) approve policy revisions
- ii. Federal Ministry of Education develop implementation guidelines with timelines and support structures
- iii. National Universities Commission, National Commission for Colleges of Education, National Board for Technical Education adapt for respective subsectors

Challenges and Mitigation:

- i. Resistance to Change:** Extensive stakeholder consultation, pilot demonstrations, and teacher involvement in policy development reduce resistance
- ii. Capacity Constraints:** Phased implementation allows time for capacity building rather than abrupt shifts
- iii. Resource Requirements:** Alignment with USPF priorities and TETFund allocations ensures financing mechanisms in place

Rationale: International evidence shows EdTech achieves systemic impact when integrated into core education policy rather than treated as parallel initiative. Countries with explicit digital learning policies (Singapore, Estonia, South Korea) demonstrate superior outcomes compared to those with ad hoc EdTech interventions (UNESCO IITE, 2022).

Cross-Cutting Enabling Recommendations

Strengthen Monitoring, Evaluation, and Learning (MEL) Systems

Recommendation: Establish comprehensive MEL framework for all educational technology initiatives with open data publication.

Framework Components:

- i. **Standardized Indicators:** Adoption of UNESCO/World Bank EdTech indicators ensuring international comparability
- ii. **Data Collection Mechanisms:** Automated data collection through learning platforms, complemented by annual surveys
- iii. **Independent Evaluation:** Third-party evaluation of major initiatives (budget >N500 million) before scaling
- iv. **Adaptive Management:** Quarterly review cycles enabling course correction based on implementation data

Specific Education Indicators:

- i. Device-to-student ratios by institution type and geographic location
- ii. School connectivity rates and bandwidth availability
- iii. Digital content utilization rates
- iv. Student digital competency assessment scores
- v. Teacher digital pedagogy certification rates
- vi. Learning outcomes differentiated by technology access levels

Open Data Portal:

- i. Public dashboard publishing MEL data quarterly
- ii. API access enabling researcher analysis
- iii. Case studies and evaluation reports freely accessible

Institutional Responsibility: Federal Ministry of Education M&E Department, with technical support from NITDA and NBS (National Bureau of Statistics) for data quality assurance.

Enhance Public-Private-Academic Partnerships

Recommendation: Formalize partnership mechanisms between government, technology companies, telecommunications providers, and academic institutions to leverage expertise and resources.

Partnership Structures:

1. EdTech Advisory Council:

- i. Multi-stakeholder body providing policy recommendations to Federal Ministry of Education
- ii. Membership: government agencies, telecom operators, device manufacturers, content providers, universities, civil society
- iii. Quarterly meetings reviewing implementation progress and identifying barriers

2. Industry-Academia Collaboration Framework:

- i. Joint research projects between EdTech companies and university research centers
- ii. Internship programs placing students in educational technology organizations
- iii. Adjunct faculty from industry teaching specialized EdTech courses

3. CSR Alignment Initiative:

- i. Coordination mechanism aligning telecommunications company CSR investments with national EdTech priorities
- ii. Tax incentives for CSR contributions meeting national education ICT standards
- iii. Recognition programs highlighting impactful corporate contributions

Precedent: Kenya's Digital Learning Partnership and Ghana's Smart Schools initiative demonstrate successful multi-stakeholder models achieving scale through coordinated efforts (Ministry of Education Kenya, 2022; Ministry of Education Ghana, 2023).

Establish Digital Inclusion Fund for Vulnerable Populations

Recommendation: Create dedicated financing mechanism ensuring device access and connectivity for students from low-income households, students with disabilities, and girls in underserved areas.

Fund Structure:

- i. Capitalization:** N10 billion initial capital (\$22 million) from Federal Government, supplemented by donor contributions
- ii. Disbursement:** Voucher program enabling eligible students to access devices and connectivity at subsidized rates
- iii. Eligibility:** Students from households below poverty line, students with disabilities requiring assistive technology, girls in states with significant gender gaps in education

Implementation:

- i. Application Process:** School-based nomination ensuring targeting accuracy
- ii. Voucher Mechanism:** Redeemable at approved vendors for devices meeting national educational specifications
- iii. Connectivity Subsidy:** One-year free data package (5GB/month) bundled with device

Projected Reach:

- i. 200,000 students annually
- ii. Focus on secondary and tertiary levels where digital devices critical for curriculum engagement

Expected Impact:

- i. Reduce device access gap for bottom income quintile from current 82% (lacking devices) to 50% within 3 years
- ii. Improve gender parity in digital access in northern states by 15 percentage points

Sustainability:

- i. Annual budgetary allocation from education ministry
- ii. Complementary state government co-funding
- iii. Revolving fund model: Successful students contribute back (pay-it-forward) enabling expansion

Governance: Administered by Federal Ministry of Humanitarian Affairs, Disaster Management and Social Development (aligned with existing social protection programs), with technical oversight from Federal Ministry of Education.

Conclusion and Recommendations

Nigeria's National Broadband Plan 2020-2025 established ambitious targets for digital inclusion in education, recognizing connectivity, device affordability, and digital literacy as essential foundations for 21st-century learning. However, analysis reveals substantial gaps between policy aspirations and implementation realities. Four years into the five-year plan, progress on education-specific targets averages below 20% of stated goals. The challenges are not solely technical or financial but reflect systemic governance, coordination, and policy integration deficits. Infrastructure-centric approaches have yielded limited educational impact without parallel investments in teacher capacity, pedagogical transformation, and sustainable operational models. Indigenous language content development, local device manufacturing, and student affordability schemes remain largely aspirational despite clear articulation in the NBP framework.

Yet these challenges present opportunities. Nigeria's young population, growing mobile connectivity, and emerging EdTech ecosystem provide foundations for educational transformation. The policy recommendations presented here chart an actionable pathway from current state to inclusive, effective digital learning environments. Success requires:

- 1. Political Will and Sustained Commitment:** Elevating education technology to presidential priority with consistent high-level engagement
- 2. Coordinated Implementation:** Establishing clear institutional leadership and inter-agency coordination mechanisms
- 3. Adequate and Sustainable Financing:** Moving beyond aspirational targets to concrete budget allocations with operational cost provisions

4. **Evidence-Driven Adaptation:** Building MEL systems enabling responsive course correction and continuous improvement
5. **Holistic Approach:** Recognizing that infrastructure alone is insufficient; teacher capacity, content, and pedagogy must evolve simultaneously.

As Nigeria prepares its next National Broadband Plan (2025-2030), incorporating these lessons and recommendations can position the education sector not as a beneficiary of digital infrastructure but as a co-designer and primary stakeholder in Nigeria's digital future. The imperative is clear: bridging the digital divide in education is not merely about technology access but about ensuring every Nigerian learner—regardless of geography, socioeconomic status, or language—can develop the competencies required to thrive in an increasingly digital world. The path forward demands courage to acknowledge implementation gaps, wisdom to learn from international experiences while respecting local contexts, and commitment to equitable digital transformation that leaves no learner behind.

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