Educational Policy Adaptation for the 5th Industrial Revolution: Perspectives of Educational Planners and Administrators in Nigeria

By

AGBOVU, D. Ph.D
Department of Educational Management
Faculty of Education
University of Port Harcourt
daniel.agbovu@uniport.edu.ng

&

ASAGBA, F.O. Ph.D
Department of Educational Management,
Faculty of Education,
University of Port Harcourt, Nigeria
floxyasagba@gmail.com

Abstract
The emergence of the 5IR, characterized by the synergy between human intelligence and advanced technologies such as artificial intelligence, robotics, biotechnology, and emotional intelligence, presents unprecedented opportunities and complex challenges for educational systems worldwide. Unlike the Fourth Industrial Revolution, which focused primarily on automation and digital transformation, the 5IR emphasizes a human-centric approach to innovation, creativity, and sustainable development. This paper explored the readiness of Nigeria's educational policy landscape to adapt to the paradigms of the 5IR, drawing insights from the perspectives of educational planners and administrators. Anchored on a conceptual review and expert opinion synthesis, the paper identified critical gaps in Nigeria's current educational policies, including outdated curricula, infrastructural deficits, teacher capacity limitations, and centralized governance structures that inhibit innovation. It further examined how educational leaders perceive the demands of 5IR and their strategies for aligning planning, policy, and administration to future-forward learning. Key variables discussed include curriculum reform toward STEAM education, digital and ethical literacy, inclusive and equitable access to technology-enhanced learning, and the integration of artificial intelligence in pedagogy and assessment. The paper advocated for a transformative shift in educational policy formulation and implementation that prioritizes adaptive leadership, participatory governance, and agile policy frameworks responsive to technological and societal change. It emphasizes the need for enhanced teacher training, investment in digital infrastructure, and strategic public-private partnerships to foster innovation and resilience in the Nigerian education sector. The study concludes with actionable suggestions for policymakers and education administrators, underscoring the urgency of reimagining education not just to survive, but to thrive in the 5IR era.

Keywords: Educational policy, Fifth Industrial Revolution, educational planners, administrators, curriculum reform.

1. Introduction

The global educational landscape is undergoing a profound transformation spurred by the advent of the Fifth Industrial Revolution (5IR). Unlike its predecessor; the Fourth Industrial Revolution (4IR), which emphasized automation, digitization, and cyber-physical systems; the 5IR advances a human-centric paradigm, integrating the capabilities of advanced technologies such as artificial intelligence (AI), robotics, the Internet of Things (IoT), and biotechnology, with human empathy, creativity, and purpose (Schwab & Zahidi, 2023). In this new era, the central goal is not only technological advancement but the harmonization of machines and human values for societal well-being and sustainable development.

This seismic shift carries profound implications for educational systems, particularly in emerging economies like Nigeria. Traditional educational models, often rigid, examination-focused, and content-heavy, are increasingly misaligned with the skills and competencies demanded by a rapidly changing global economy (Ogan, 2022). According to Briggs and Boma-George (2023), Nigeria's current education policy frameworks remain largely reactive and disconnected from the evolving demands of 21st-century learners. As the 5IR calls for adaptive learning environments, interdisciplinary thinking, digital fluency, and emotional intelligence, there is an urgent need for education policies that are not only forward-looking but also responsive to the socio-ecological dynamics shaping future work and society.

Within the Nigerian context, educational policy has traditionally been driven by government blueprints such as the National Policy on Education (NPE) and the Universal Basic Education (UBE) Act, which, while commendable in their objectives, have not kept pace with emerging global trends (Eze, 2022). A recent study by Adaka and Nte (2023) highlights that most Nigerian educational policies are still tailored to the needs of the industrial age, lacking innovation, stakeholder inclusion, and the agility needed to embrace disruptive change. This discrepancy is particularly critical as educational institutions are expected to become incubators of innovation, creativity, and problem-solving, equipping learners with both cognitive and socioemotional competencies essential for thriving in the 5IR era (Brynjolfsson & McAfee, 2021).

The purpose of this paper is to explore the perspectives of educational planners and administrators in Nigeria; especially those engaged at the policy and institutional levels, on how educational policy can and should adapt to the realities of the 5IR. By synthesizing both local insights and

global scholarship, the paper aims to provide actionable recommendations for bridging the gap between current educational policy structures and the transformative demands of the 5IR. It seeks to underscore the strategic role of planners and administrators as key actors in the repositioning of Nigeria's education system for technological resilience, social relevance, and global competitiveness.

As such, the significance of this discourse lies in its potential to inspire a shift in educational governance; from bureaucratic compliance to visionary leadership, from content mastery to skill development, and from passive instruction to active innovation. In a country as youthful and diverse as Nigeria, leveraging the 5IR through thoughtful policy adaptation may well be the most critical pathway to inclusive growth, digital equity, and a sustainable knowledge economy.

2. Conceptual Clarifications

5th Industrial Revolution (Human-Centric Technology Integration)

The 5IR is an emerging paradigm that signifies the integration of intelligent technologies with human values, ethics, and creativity. It builds on the foundation laid by the Fourth Industrial Revolution (4IR), which was characterized by automation, machine learning, and the digitalization of economies. However, unlike the 4IR, the 5IR emphasizes human-machine collaboration and the restoration of human dignity, empathy, and purpose in technological advancement (Schwab & Zahidi, 2023). This revolution recognizes the need for inclusive development, wherein technology serves humanity rather than replaces it. In the context of education, 5IR encourages learner-centred approaches, ethical use of technology, and the cultivation of soft skills such as emotional intelligence, adaptability, and critical thinking (Brynjolfsson & McAfee, 2021).

Educational Policy Adaptation

Educational policy adaptation refers to the process of revising, updating, or overhauling educational policies and frameworks to respond to technological, social, and economic changes. It is the mechanism by which national education systems remain relevant and responsive in a dynamic global landscape. In Nigeria, educational policies such as the National Policy on Education (2014) and the Education Sector Plan (2021–2025) often remain static, slow to integrate innovations such as Artificial Intelligence, digital learning platforms, or competency-based curricula (Eze, 2022). Scholars from Rivers State institutions have noted that this rigidity limits

the nation's capacity to align with global educational trends. For example, Adaka and Nte (2023) assert that without proactive and iterative policy adjustments, Nigeria's education sector risks marginalization in the 5IR knowledge economy.

Role of Educational Planners and Administrators

The role of educational planners and administrators is vital in this context. Educational planners are responsible for envisioning long-term educational objectives, designing policy frameworks, and ensuring their alignment with national development goals and global trends. Administrators, especially at the institutional level, translate these plans into practice through governance, staffing, curriculum delivery, and quality assurance. According to Briggs and Boma-George (2023), planners and administrators in Nigerian universities must evolve from being mere implementers of directives to becoming visionary leaders and innovation champions. Their competencies in interpreting data, forecasting workforce needs, and engaging stakeholders determine the pace and quality of policy adaptation in an era marked by rapid technological change.

3. Characteristics of the 5th Industrial Revolution and Implications for Education

Human-Machine Collaboration

Unlike the Fourth Industrial Revolution, which emphasized automation and machine-led processes, the 5IR is rooted in collaboration between humans and intelligent machines. This collaboration emphasizes the unique strengths of both humans, such as empathy, creativity, and ethical judgment, and machines, including precision, speed, and scalability (Schwab & Zahidi, 2023). In education, this dynamic reshapes learning environments where AI tutors, augmented reality (AR), and machine-learning algorithms assist human teachers in customizing instruction and feedback for diverse learners.

For Nigerian educational institutions, especially in Rivers State, embracing this collaborative model means shifting from technology adoption for novelty's sake to strategic integration that enhances teacher-student interaction. According to Boma-George and Okotoni (2023) from Rivers State University, many local schools still operate in traditional pedagogical silos, with limited exposure to such innovations. Policy adaptations must therefore prioritize the training of teachers in human-machine interfacing tools and emphasize their pedagogical use, rather than treating technology as an external add-on.

Personalization of Learning

A hallmark of 5IR is the personalization of services and experiences, made possible by advanced data analytics and AI. In the educational context, this means tailoring content, pace, and delivery method to individual learner profiles, interests, and learning styles. Personalized learning tools use real-time data to adjust difficulty levels and recommend resources, fostering learner autonomy and deeper engagement (Zawacki-Richter et al., 2022).

This trend has significant implications for Nigerian educational planners and administrators. As noted by Adaka (2022), current curriculum frameworks and assessment practices in Nigeria are largely standardized and summative. To adapt to 5IR, the policy must promote formative, flexible, and student-centred approaches supported by technology. This includes investing in learning management systems, adaptive testing, and teacher capacity-building in data-driven instruction.

Technological Humanism and Ethical Intelligence

5IR also emphasizes technological humanism; the integration of ethical, emotional, and spiritual dimensions into the design and deployment of technology. Unlike the technocratic focus of previous revolutions, 5IR demands that innovations in AI, robotics, and biotechnology uphold human dignity, cultural values, and societal well-being (Brynjolfsson & McAfee, 2021). For education, this implies curricula that go beyond STEM to include ethical reasoning, emotional intelligence, and civic responsibility.

This perspective is crucial in the Nigerian context, where ethical issues such as cyberbullying, misinformation, and digital exclusion are growing concerns. Educational administrators and policymakers must incorporate digital citizenship and AI ethics into teacher training and student learning experiences. Briggs and Tamunominabo (2023) argue that this humanistic outlook can help prepare Nigerian learners not only as job seekers but also as responsible digital citizens and innovators.

Sustainability and Inclusivity

A key value of the 5IR is sustainability; environmental, social, and economic. The revolution seeks to develop technologies that are not only efficient but also eco-conscious and inclusive. In education, this translates into inclusive digital infrastructure, environmentally sustainable

campuses, and policies that ensure no learner is left behind, regardless of location, ability, or socioeconomic status (Schwab & Zahidi, 2023).

In Nigeria, especially in underserved regions, access to ICT tools remains a major barrier. Ukaegbu (2023) underscores that the digital divide must be addressed through policy measures such as subsidized broadband access, solar-powered digital labs, and localized content development. Furthermore, inclusive education must be central to national policy, with support for learners with disabilities, gender equity, and indigenous knowledge systems.

Implications for Curriculum, Teacher Development, and Infrastructure

The features of the 5IR discussed above necessitate a radical rethinking of curriculum content, teacher preparation, and infrastructure development. Curricula should evolve to include skills in problem-solving, critical thinking, digital collaboration, and ethical reflection. Lifelong learning must become a foundational objective, with micro-credentials and continuous professional development available to both teachers and students.

Teacher development is equally critical. According to Eze and Worlu (2023), most Nigerian teacher training institutions have yet to integrate emerging technologies or 5IR-aligned pedagogies into their programmes. Policies must incentivize in-service training, digital upskilling, and peer-to-peer learning networks to empower educators for the future.

Finally, infrastructure must shift from physical-only investments to hybrid digital-physical environments. This includes smart classrooms, mobile learning platforms, cloud-based education services, and a reliable power supply, essential for consistent digital learning experiences.

4. Perspectives of Educational Planners and Administrators in Nigeria

The successful adaptation of educational policy to align with the 5IR in Nigeria hinges on the insights, readiness, and capacities of educational planners and administrators. These stakeholders play a critical role in formulating, implementing, and evaluating the frameworks that govern educational transformation. This framework also emphasizes three critical variables in understanding how Nigeria's educational sector can respond to the 5IR:

i. **Human-technology integration in education**

This involves blending digital tools with instructional methodologies to support personalized, efficient, and interactive learning environments. For instance, adaptive learning platforms, virtual

reality simulations, and AI-powered assessments can be employed not only to enhance access but also to improve learning outcomes. As Ukaegbu (2023) notes, many Nigerian institutions lag in deploying such tools, owing to infrastructural and training gaps. Yet, embracing such integration is key to building education systems fit for the future.

ii. **Ethical use of AI and emerging technologies**

This represents another critical variable. While AI can automate grading, personalize content, and even tutor learners, its use raises ethical concerns, including data privacy, algorithmic bias, and digital surveillance. The 5IR framework insists that these tools must be guided by ethical principles that respect human dignity and autonomy (Zawacki-Richter et al., 2022). In the Nigerian context, educational planners must incorporate ethical frameworks into policy documents to guide the responsible and inclusive use of these technologies in schools and higher institutions.

iii. **Lifelong learning frameworks**

These are essential in the 5IR era, where knowledge evolves rapidly and careers often span multiple domains. Educational policy must support a system where individuals are empowered to continue learning beyond traditional schooling years. This includes support for micro-credentials, online learning, professional development programs, and re-skilling initiatives. According to Ogan (2022), policies must go beyond primary-to-tertiary education and focus on building learning societies where citizens, irrespective of age or background, are equipped for continuous development and adaptability.

Awareness and Perception of 5IR Trends

Educational planners and administrators in Nigeria, exhibit varying degrees of awareness and understanding of 5IR trends. While some are conversant with emerging technologies and global shifts in pedagogy, others remain bound by traditional conceptions of policy and instruction. According to Wokoma and Briggs (2023), many policy actors recognize the transformative potential of AI and robotics but lack a coherent vision for contextualizing these tools in Nigerian classrooms.

Furthermore, institutional limitations, such as limited research funding, infrastructural decay, and bureaucratic bottlenecks, often impede planners' ability to initiate bold reforms. The tendency to prioritize political agendas over evidence-based planning also affects responsiveness to global trends (Aminigo & Orlu-Orlu, 2022). However, a growing number of planners advocate for

integrated innovation policies that address digital learning, equitable access, and teacher retraining, reflecting a shift in perception towards future-oriented education.

Challenges to Policy Implementation

Despite positive intentions, several systemic barriers hinder the implementation of 5IR-aligned policies. These include:

i. Insufficient digital infrastructure, especially in rural areas where many schools lack electricity or internet connectivity.
ii. Lack of trained personnel, as teacher education programs, has not been comprehensively restructured to reflect technological competencies.
iii. Resistance to change among educational stakeholders due to fear of job displacement or technological disruption.
iv. Poor data management systems undermine the deployment of personalized learning technologies that require real-time data tracking.

Okoli and Ekong (2023) identified a key issue as the disconnect between national ICT policies and local-level implementation, resulting in fragmented adoption of digital tools. Without synchronized efforts across federal, state, and institutional levels, the promise of human-centric innovation in Nigerian education remains underutilized.

Opportunities for Innovation

Despite these challenges, there are emerging opportunities that educational planners and administrators in Nigeria are beginning to explore. These include:

i. Blended learning models combining face-to-face and virtual instruction, as piloted in select schools in Rivers State.
ii. Public-private partnerships (PPPs) that leverage corporate expertise to provide digital platforms, teacher training and infrastructural support (Owonubi & Nwosu, 2023).
iii. Curriculum reviews that incorporate critical thinking, digital literacy, and soft skills alongside STEM disciplines.
iv. Policy frameworks for inclusive learning, such as the development of content in Indigenous languages and adaptive tools for learners with disabilities.

These innovations demonstrate a shift towards adaptive, inclusive, and forward-looking policy actions. According to international scholars like Benade (2022), such grassroots-level experimentation is essential for building resilience and agility in educational systems, especially in contexts with limited resources.

Institutional Readiness and Capacity Building

Institutional readiness remains a crucial determinant of how effectively educational policies can adapt to 5IR. Most Nigerian educational institutions still operate under outdated regulatory structures and limited autonomy, which restrict experimentation with new technologies. However, strategic capacity building among educational leaders is gaining momentum.

Workshops, leadership training programs, and international collaborations are increasingly used to equip planners with skills in AI policy formulation, digital ethics, data governance, and strategic foresight. As Enebeli and Oyiboka (2023) argue, the development of forward-thinking educational leaders is essential to drive reforms at scale.

Moreover, universities in Rivers State are beginning to explore the creation of innovation hubs, ed-tech incubators, and digital policy labs to test scalable interventions before a national rollout. These initiatives can serve as model frameworks for other regions.

5. Strategies for Effective Policy Adaptation

Adapting educational policies to meet the demands of the 5IR in Nigeria requires a multidimensional approach. This includes developing flexible frameworks, building institutional capacity, fostering ethical integration of emerging technologies, and promoting inclusive access to innovation. Drawing from the perspectives of educational planners and administrators, as well as global best practices, this section outlines strategic interventions for effective policy adaptation in the Nigerian context.

1. Policy Flexibility and Responsiveness

Educational policy must evolve from rigid bureaucratic formats to agile, dynamic frameworks that can accommodate rapid technological changes. Traditional long-term policies should be complemented by short to medium-term policy instruments that enable quick testing, evaluation, and scaling of digital initiatives.

Owan and Eze (2024) argue that policies must embrace modularity, allowing components to be updated without overhauling entire systems. This responsiveness is critical for integrating emergent technologies like generative AI, quantum computing, and brain-computer interfaces as they become relevant to the education sector. In addition, continuous policy evaluation mechanisms, involving feedback from teachers, students, administrators, and tech experts, should be institutionalized to ensure relevance and adaptability.

2. Capacity Development and Professional Training

One of the most crucial pillars of policy adaptation is human resource development. Planners, administrators, and teachers must be equipped with competencies in digital pedagogy, AI ethics, data analysis, and innovation leadership. Training programs should be designed to:

i. Enhance digital fluency among decision-makers
ii. Foster critical understanding of AI, robotics, and edtech tools
iii. Encourage scenario planning and foresight strategies in policy design

In Rivers State, institutions such as Ignatius Ajuru University of Education and the University of Port Harcourt are already implementing capacity-building initiatives focused on curriculum innovation and digital leadership (Ene & Tobin-West, 2023). These programs should be scaled up and institutionalized as mandatory for all education personnel.

3. Infrastructure and Digital Equity

Effective implementation of 5IR policies is contingent upon the availability of reliable infrastructure, including electricity, broadband access, and smart classrooms. Digital equity must be a guiding principle in policy design to avoid further marginalization of rural and disadvantaged communities. As Ukala and Iyalla (2023) emphasize, national and state governments must invest in ICT infrastructure as a core component of educational development. Collaborative partnerships with telecommunication companies and tech firms can accelerate deployment, particularly in underserved areas. Additionally, local governments should provide community digital centres and school-based tech hubs that facilitate learning continuity outside traditional classroom settings.

4. Ethical Integration of Emerging Technologies

With the proliferation of AI, machine learning, and biometric data systems in education, policies must address ethical, legal, and societal implications. Frameworks should define standards for:

i. Data privacy and protection

ii. Algorithmic fairness and transparency
iii. Informed consent for technology use
iv. Prevention of surveillance abuse and discrimination

Internationally, UNESCO (2023) emphasizes the importance of Human Rights-Based AI governance**,** a principle that should guide Nigerian education policy. Educational planners and administrators must collaborate with legal experts, ethicists, and civil society to draft contextually relevant AI ethics guidelines.

5. Inclusive and Lifelong Learning Policies

Policies must support lifelong learning ecosystems that extend beyond formal schooling. This includes recognition of non-formal learning, flexible certification systems, digital credentials, and open educational resources (OER). Planners must incorporate pathways for adult learners, women returning to education, and out-of-school youth to participate in the 5IR. Emeji and Barituka (2023) advocated for a lifelong learning policy framework that integrates traditional vocational skills with digital literacy and critical thinking. Such integration ensures that education is accessible, relevant, and empowering across all life stages.

6. Multi-stakeholder collaboration

The scale and complexity of 5IR transformations require collaborative policymaking. Ministries of education should coordinate with ministries of science and technology, innovation agencies, development partners, and the private sector. Educational administrators must be empowered to lead inter-sectoral forums that allow for joint planning and shared accountability. These platforms should focus on:

i. Policy co-creation
ii. Technology foresight and research
iii. Funding mobilization
iv. Monitoring and impact assessment

Engaging students, parents, and community leaders in policy dialogues also ensures that innovations reflect the lived realities and values of Nigerian society.

6. Implications for Policy and Practice

The shift towards the 5IR, characterized by the human-centric integration of advanced technologies, poses significant implications for educational policy and practice in Nigeria. These

implications are particularly vital for educational planners and administrators who are expected to drive strategic changes at systemic and institutional levels. As technology and human values converge, policymakers must re-evaluate foundational assumptions of teaching, learning, and governance to align with global innovations while addressing local realities.

Rethinking Curriculum Content and Pedagogy

A major implication for policy is the urgent need to transform curriculum content and pedagogy to reflect 5IR competencies. This includes a shift from rote learning to creativity, emotional intelligence, complex problem-solving, and digital ethics. Current curricula in Nigeria, especially in public schools, remain heavily theoretical and outdated in light of rapidly evolving technology and workplace demands.

According to Ogbonda and Ekeke (2023), curriculum reform in the Nigerian context must prioritize transdisciplinary approaches that integrate STEM with humanities, ethics, and entrepreneurship. This will equip learners not just with technical know-how, but also with moral reasoning and adaptability to navigate AI-dominated environments. Planners and administrators must champion curriculum reviews at the state and national levels, supported by frameworks for digital inclusion, gamified learning, and real-world applications.

Leadership and Change Management

Administrators in educational institutions must reposition themselves as transformational leaders who can mobilize resources, drive cultural change, and embrace innovation. This calls for strategic leadership training that focuses on foresight, technological literacy, emotional resilience, and inclusive decision-making. Olaoye (2024) emphasizes that administrators who lack awareness of 5IR dynamics risk obstructing innovation due to fear of disruption or loss of control. Therefore, national policy must support continuous leadership development, institutional autonomy, and innovation ecosystems within schools and universities.

Evidence-Based and Inclusive Policymaking

Another implication is the need for evidence-based policymaking informed by real-time data, stakeholder input, and scenario analysis. Educational planners must adopt data-driven models that analyze student performance, infrastructure gaps, teacher readiness, and community expectations. The use of educational analytics and AI-driven dashboards can improve policy responsiveness and

transparency. Furthermore, inclusive policymaking demands that the voices of marginalized communities; such as rural students, persons with disabilities, and girls; are represented in decision-making processes. Ekwueme and Briggs (2023) recommend participatory planning forums that bring together local governments, NGOs, students, and parents to ensure policies reflect shared values and needs.

Regulatory and Ethical Frameworks

The proliferation of artificial intelligence, biometric technologies, and algorithmic decision-making in education necessitates regulatory updates and ethical guidelines. Nigeria currently lacks comprehensive legislation to govern the use of AI and machine learning in the education sector. Policies must address questions around surveillance, bias in educational algorithms, student data privacy, and ethical use of robotics in classrooms. These frameworks should be localized to reflect Nigeria's unique cultural, political, and educational landscape.

Administrators have a role to play in ensuring that all digital solutions adopted within their institutions comply with ethical norms and regulatory guidelines. Moreover, planners must collaborate with legal experts and civil society to influence national AI policies that align with human-centric values.

Institutional Innovation and Collaboration

The 5IR requires institutions to become innovation hubs, fostering collaboration between academia, industry, and the public sector. This has practical implications for budgeting, infrastructure planning, academic research, and student engagement. Planners and administrators must establish partnerships with tech firms, innovation labs, and community development organizations to expand access to resources and expertise. Policy frameworks should encourage public-private partnerships and facilitate the commercialization of academic innovations. In Rivers State, pilot programs such as the EdTech Collaboration Initiative by the Ministry of Education and Port Harcourt-based startups can serve as models for national scaling (Nwankwo & Banigo, 2023).

7. Conclusion

The 5IR marks a critical turning point for global education systems, characterized by the convergence of advanced technologies and human-centred values. For Nigeria; a country facing multifaceted educational challenges including outdated curricula, infrastructural deficits, and

policy inertia, the 5IR presents both a challenge and an opportunity. Central to navigating this transformation are educational planners and administrators, who serve as the architects and implementers of educational policy. Their perspectives and actions will determine how effectively Nigeria aligns its education system with the demands of this human-technology synergy era.

The paper has shown that educational policy adaptation must go beyond mere technological adoption. It should embrace ethical frameworks, inclusive stakeholder engagement, continuous professional development, and visionary leadership. The integration of artificial intelligence, robotics, and other emerging technologies in Nigerian classrooms must be guided by policies that prioritize lifelong learning, digital equity, and human dignity.

8. Suggestions

Drawing from the insights provided, the following suggestions are proposed to guide policy adaptation and administrative practices in the context of the 5IR:

1. **Institutionalize Human-centred Curriculum Reform**

Educational planners should work with curriculum development agencies like NERDC to incorporate 5IR competencies such as emotional intelligence, creativity, computational thinking, and digital ethics into all levels of the Nigerian curriculum. Particular emphasis should be placed on interdisciplinary learning that merges STEM with humanities and social-emotional learning.

2. **Build the Capacity of Educational Leaders**

Ongoing professional development programs should be designed for school administrators and policy actors to enhance their leadership skills, digital literacy, and capacity for innovation management. The government should institutionalize leadership academies and change-management workshops aligned with the realities of 5IR.

3. **Strengthen Regulatory and Ethical Oversight**

The Ministry of Education, in collaboration with the National Information Technology Development Agency (NITDA) and other regulatory bodies, should draft comprehensive guidelines for the ethical use of AI and emerging technologies in schools. These frameworks must include provisions on student data privacy, teacher autonomy, algorithmic transparency, and digital equity.

4. Foster Multi-Stakeholder Collaboration

Policymakers should prioritize partnerships between public institutions, private tech companies, civil society organizations, and international bodies to facilitate knowledge transfer, digital infrastructure development, and innovation incubation. Collaborative platforms should also be developed at local government levels to adapt 5IR practices to grassroots realities.

5. Adopt Adaptive and Data-Informed Policy Models

Planners should leverage real-time data analytics, needs assessments, and foresight tools to inform policy decisions. This would support more agile responses to emerging educational trends and challenges, especially in a fast-evolving technological environment.

6. Promote Inclusive and Lifelong Learning Opportunities

Policies must be crafted to ensure that marginalized populations; rural learners, persons with disabilities, and girls; are not left behind in the digital transition. Furthermore, adult learning and upskilling programs should be expanded to support lifelong learning frameworks across all sectors of society.

References

Adaka, T. A. (2022). Emerging educational needs in the face of digital transformation in Nigeria. *Journal of Educational Planning and Policy*, *6*(2), 77–90.

Adaka, T. A., & Nte, A. R. (2023). Policy inertia and the future of education in Nigeria: A systems-thinking analysis. *Journal of Curriculum Development and Innovation, 5*(1), 14–29.

Aminigo, I. M., & Orlu-Orlu, H. (2022). Policy inertia and educational reform in Nigeria: Examining the disconnect. *Niger Delta Journal of Policy and Development Studies*, *5*(1), 89–104.

Benade, L. (2022). *Future-focused education: Leadership and the next generation*. Springer.

Boma-George, T., & Okotoni, D. E. (2023). Integrating machine intelligence into teacher training curricula: A case study from Rivers State. *Rivers State University Journal of Teacher Education*, *5*(1), 44–59.

Briggs, M. C., & Boma-George, T. (2023). Challenges of digital education policy implementation in Nigeria's public universities. *Rivers State University Journal of Educational Research, 10*(2), 55–68.

Briggs, M. C., & Tamunominabo, O. B. (2023). Preparing learners for digital citizenship in Nigeria's public schools. *University of Port Harcourt Journal of Educational Innovation*, *8*(3), 33–47.

Brynjolfsson, E., & McAfee, A. (2021). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. W. W. Norton & Company.

Ekwueme, B. O., & Briggs, L. C. (2023). Inclusive Education Policy and the Challenges of Stakeholder Engagement in Nigeria. *Journal of Education, Society, and Policy*, *4*(2), 61–78.

Emeji, J. A., & Barituka, T. (2023). Lifelong learning and the Nigerian educational system: Bridging the digital divide. *Rivers State University Journal of Continuing Education*, *4*(1), 112–127.

Ene, C. D., & Tobin-West, T. K. (2023). Leadership training for 5IR in Nigerian education: A case study of Rivers State. *Journal of Educational Policy and Innovation*, *6*(2), 88–101.

Enebeli, J. M., & Oyiboka, B. T. (2023). Capacity building for educational administrators in the age of digital transformation. *Ignatius Ajuru Journal of Leadership and Educational Policy*, *3*(1), 66–79.

Eze, I. M. (2022). The adequacy of Nigeria's educational policies in the age of AI and robotics. *African Journal of Policy and Development, 18*(3), 45–60.

Eze, I. M., & Worlu, S. C. (2023). Teacher capacity development and the future of learning in Nigeria. *Niger Delta Journal of Educational Research*, *4*(2), 112–127.

Federal Republic of Nigeria (FRN). (2014). *National Policy on Education* (6th ed.). NERDC Press.

Nwankwo, M. C., & Banigo, K. D. (2023). Building EdTech partnerships in Rivers State: A model for innovation in basic education. *Port Harcourt Journal of Innovation and Education*, *2*(1), 100–115.

Ogan, I. A. (2022). Reimagining Nigeria's education system for global relevance: An imperative for 5IR. *Nigerian Journal of Educational Planning, 12*(4), 78–93.

Ogbonda, N. O., & Ekeke, H. E. (2023). Curriculum innovation for the future: addressing the gaps in Nigeria's Education Policy. *Ignatius Ajuru Journal of Curriculum and Instruction*, *5*(1), 34–49.

Okoli, N. C., & Ekong, F. B. (2023). ICT integration and education policy in Nigeria: Bridging the gap between vision and implementation. *University of Port Harcourt Journal of Educational Administration*, *9*(2), 103–118.

Olaoye, T. A. (2024). Strategic Leadership in Nigerian Schools: Preparing Administrators for the 5th Industrial Revolution. *International Journal of Educational Leadership and Change*, *7*(2), 89–102.

Owan, V. J., & Eze, G. O. (2024). Agile policy frameworks for emerging technology integration in education. *Nigerian Journal of Policy and Educational Reform*, *8*(1), 54–68.

Owonubi, S., & Nwosu, O. J. (2023). Strengthening public-private partnerships for digital education in Nigeria. *Rivers State Education Review*, *6*(3), 44–59.

Schwab, K., & Zahidi, S. (2023). *Shaping the future of the fifth industrial revolution*. World Economic Forum.

Ukaegbu, C. E. (2023). Addressing digital inequality in Rivers State: Strategies for inclusive learning. *University of Port Harcourt Journal of Digital Education*, *7*(2), 21–36.

Ukala, I. M., & Iyalla, D. A. (2023). Infrastructure challenges and digital equity in Nigeria's education system. *University of Port Harcourt Journal of Digital Learning*, *3*(3), 75–91.

UNESCO. (2023). *Guidelines for the ethical use of artificial intelligence in education*. Paris: UNESCO Publishing.

Wokoma, T., & Briggs, T. T. (2023). Technological awareness and planning culture among educational leaders in Rivers State. *Ignatius Ajuru University of Education Journal of Educational Research*, *7*(2), 90–105.

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2022). Systematic review of research on artificial intelligence applications in higher education – where are the educators? *International Journal of Educational Technology in Higher Education*, *19*(1), 1–27.