Journal of Research and Education for Development in Africa (JOREDEA)
Volume 1, Issue 2, September, 2025

ROLE OF DIGITAL TECHNOLOGY IN EDUCATION: THE CASE OF MODEL-BASED TEACHING AND RESEARCH

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Lecture presented at the 2025 Conference
of

FONTIS AID FOUNDATION AND FACULTY OF ARTS, ALVAN IKOKU FEDERAL UNIVERSITY OF EDUCATION, OWERRI

THEME: AFRICAN DIGITAL DAWN; TRANSFORMING EDUCATION THROUGH TECHNOLOGY

Preamble

The conference theme, as advertised, is "African Digital Dawn; Transforming Education Through Technology," which is apt at this time because our educational institutions cannot watch the digital revolution from the sidelines while they should be at the frontline of its initiation, development, and deployment.

I have titled my paper: "**Role of Digital Technology in Education: The Case of Model-Based Teaching and Research."**

The key phrases of my paper are: **Digital Technology, Digital Education**, and **Model-Based Teaching and Research**.

Summary

The African Union (AU) views education as a fundamental human right that Member States are obliged to recognize. Through Agenda 2063 Goal 2, the continent aims to develop well-educated citizens and drive a skills revolution powered by science, technology, and innovation (STI). The AU's education mandates include crafting and harmonizing policies to foster knowledge, competencies, skills, research, innovation, and creativity that uphold Africa's core values and support sustainable development within a globalized world. Moreover, the Continental Education

Strategy for Africa (CESA 16-25) promotes transformative education and training to achieve the United Nations' Sustainable Development Goal (SDGs) 4. Digital education provides an economical approach to improving a country's progress on the SDGs without requiring large physical infrastructure investments.

When accessible, mobile devices and the internet serve as catalysts, enabling digital education through e-learning platforms and digital resources to deliver personalized and flexible learning experiences, allowing students to learn at their own pace. Additionally, technology empowers educators to craft dynamic, interactive lessons, customize instruction to individual needs, and offer real-time feedback, thereby enhancing teaching quality and learning outcomes. One promising application of digital methods is in research.

The advent of Artificial Intelligence (AI) facilitates the development of research methodologies, literature searches, peer review processes, and reliable conclusions with ease. Since contemporary research is predominantly predictive, it depends heavily on various models. Digital tools enable model-based research using extensive system and internet analytics. Nonetheless, Africa continues to face obstacles from the digital divide. Many students lack access to essential technological infrastructure such as reliable internet, computers, and digital devices. Expanding access must go hand in hand with prioritizing digital literacy and skills development, integrating digital literacy into curricula, and training educators to effectively utilize technology in instruction—vital steps to prepare students for the digital era. Digital technology has become a societal necessity to guarantee education as a basic human right, especially amid increasing crises and conflicts worldwide.

During the COVID-19 pandemic, countries without sufficient ICT infrastructure and well-resourced digital learning systems experienced the most significant disruptions and learning losses. Up to one-third of students globally were unable to access education during over a year of school closures. This disruption

underscored the urgent need to align technology and human skills to transform education models and to create inclusive, open, and resilient learning systems.

UNESCO advocates for digital innovation to expand access to educational opportunities, promote inclusion, improve learning relevance and quality, build ICT-enhanced lifelong learning pathways, strengthen education management systems, and monitor learning outcomes. To realize these objectives, UNESCO concentrates on developing digital literacy and competencies among teachers and students. Open Educational Resources (OERs) are teaching, learning, or research materials made freely accessible to all. UNESCO champions their development and use, working to establish indicators for monitoring and evaluating their effectiveness and impact, and supporting the creation of national OER policies.