Consultancy on Teaching, Learning and Research in Nigeria's Tertiary Institutions Post Pandemic/COVID – SRFP/NCC/RD/05/2021

Executive Summary

Synopsis

The outbreak of the COVID-19 pandemic stirred a paradigm shift in the teaching, learning and research methods used by tertiary institutions globally. The effects of the pandemic exposed numerous limitations of the predominant traditional face-to-face teaching & learning technique.

Most Nigerian tertiary institutions were not prepared nor equipped for continuity of teaching, learning and research activities; just a few were able to adapt to the 'new normal' of teaching and learning using e-learning solutions and ICT tools.

This necessitated the need is to examine and provide new solutions for teaching and learning post-COVID to improve learning outcomes and the quality of tertiary education in Nigeria.

This project focuses on "*Teaching, Learning & Research in Nigeria's Tertiary Institutions Post Pandemic/COVID*" with a primary objective of developing a workable framework that will sustain innovative research, teaching and e-learning platform in Nigeria tertiary institution that impacts academia but also addresses local socio-economic challenges post-COVID. The period for the study is from 2015 to 2020.

Methodology

Project implementation was achieved through a combination of methods. These includes:

a. Review of documentations, reports and publications relevant to the project such as Nigeria National Education Policy (Revised edition - 2014), National Policy on ICT in Education (2019), OER Policy for Higher Education in Nigeria; published by NUC, National Minimum Standards and Establishment of Institutions Act 2018, Benchmark for Minimum Academic Standards (BMAS); published by the National Universities Commission (NUC), Nigeria Certificate in Education - Minimum Standards for General Education (Revised edition - 2020), Ministry of Education's COVID-19 response strategy etc.

b. **Stratified sampling** and field survey of students, lecturers and researchers in Nigerian Tertiary institutions across the 36 states of the Federation and FCT. A total of 12,235 respondents across 74 tertiary institutions were sampled. All categories of Nigerian tertiary institutions were sampled and at least one tertiary institution was sampled per state. A CAPI software tool was used for quantitative data collection; all gathered quantitative data were analysed to deduce findings.

c. Qualitative Survey, Data Collection and Analysis was also done to validate and complement findings from the quantitative analysis. Key stakeholders in the Nigerian tertiary education space were engaged and interviewed to obtain data across different viewpoints on the research study. Some interviewees include: NUC, NCCE, TETFund, NCC, DBI, LRCN, TRCN, ACETEL, etc.

d. Study of Nigerian tertiary Institution curriculum as defined in the revised copies of minimum academic standards for universities, polytechnics and colleges of education in Nigeria.

e. Review of Open Education Resource (OER) and e-learning tools popularly used by Nigerian tertiary institutions.

Preliminary Findings on Teaching, Learning and Research in Nigerian Tertiary Institutions

There are about 554 tertiary institutions in Nigeria offering different courses around 13 major fields of discipline (faculties). Over 90% of students and lecturers are connected to the national electricity grid, can use the internet & a computer, have access to a computer connected to the internet and own a smartphone. 83% of respondents own a desktop computer or laptop. Only 63% of respondents affirmed to take part in e-learning for teaching and learning purposes; 79% of respondents attested to having a campus-wide network within their tertiary institution.

Over 85% of respondents knew how to use the internet before COVID-19 with at least 73% of respondents having access to the internet and over 94% owning a smartphone before the pandemic. About 65% of students and 83% of lecturers owned a laptop before COVID; 18% of students do not own a laptop. Only 50% of students and lecturers commenced e-learning activities online before the pandemic. 24% of students and 27% of lecturers have never engaged in online e-learning activities.

73% of respondents affirmed that COVID-19 brought academic activities to a complete halt in their tertiary institution. In the last 3 to 5 years, TETFund and Administration of Tertiary institutions have been the major facilitators in the provision of ICT infrastructure to Nigeria tertiary Institutions.

At least 53% of students and teachers frequently use desktop, computers and laptops for academic purposes and about 70% frequently use the internet for same purpose. The internet is the most frequently used ICT asset for educational purposes. No fewer than 44% of respondents sometimes use LMS, interactive whiteboards and virtual meeting tools for teaching, learning and research purposes.

About 80% of students and lecturers consume between 1GB to 20GB of data monthly. 21% of students use between 11GB to 15GB of data monthly representing the highest frequency for students while 26% of lecturers use between 6GB to 10GB monthly - representing the highest frequency for lecturers & administrators. About 80% of students and lecturers spend below N10,000 monthly for data subscription. Nigerian students and lecturers spent more time online for academic activities during COVID-19.

36% of respondents confirmed that there is no usage of OER or e-learning systems in their institution. Google Classroom, Moodle and other foreign LMS solutions are commonly used by institutions practicing e-learning. A comparative analysis of commonly used LMS was performed and an assessment of available OERs in tertiary institutions was also conducted. Less than 45% of respondents rated the level of effectiveness of their institution's e-learning/LMS solutions and adoption policy as being just "Effective". Robustness limitations, course management and assessment related issues amongst others, are the top three (3) limitations of the use and adoption of deployed e-learning systems in Nigerian tertiary institutions.

Slow internet bandwidth, power supply issues, internet subscription cost, lack of technical & managerial support and lack of e-learning knowledge are the top 5 barriers/challenges to the use and adoption of e-learning systems in Nigerian tertiary institutions.

About 80% of respondents agreed or strongly agreed that ICT has improved student and lecturer digital literacy levels, increased use of internet for academic and non-academic activities and improved the overall teaching and learning experience in Nigerian tertiary institutions.

Components of the current Nigerian tertiary education curriculum that require update to allow for alignment with e-learning include: Practical and laboratory courses and topics, Volume of coursework, Student Assessment & examination model and Course timetable design and structure.

Tertiary education regulators have commenced creation and implementation of different policies that will support the adoption and adaptation of e-learning in Nigerian tertiary institutions as well review of current curriculum. The World Bank group has also contributed immensely in promoting open and distance learning through its ACE program in Nigerian; currently, there are 25 ACE centres in Nigeria.

The major interventions by NCC to support teaching, learning and research in Nigerian tertiary institutions include: facilitation of broadband penetration, ADAPTI programme, Wireless Cloud, DBI, promotion of innovation in EdTech and funding of telecommunications-based research innovation.

A SWOT analysis of the e-learning landscape in Nigerian tertiary institutions was also done. Access to stable electricity & ICT tools, reliable broadband and digital literacy were identified as key determinants for use of ICT for teaching, learning and research in Nigerian tertiary institutions.

Conceptual Framework for Transition and Sustainability of e-Learning in Nigerian Tertiary Institutions

A conceptual framework for transition and sustainability of e-learning in Nigerian tertiary institutions was developed. The framework consists of two domains: transition and sustainability. The transition domain involves the provision of key enablers such as: regulations & policies, curriculum review, ICT facilities, cybersecurity, broadband access

and digital literacy. The sustainability domain relies on two key activities: Monitoring & enforcement and Periodic assessments, upgrades and updates.

Curriculum-Update Initiatives to Support e-Learning

a. Collaborative review, update and implementation of new tertiary education curriculum that allows for seamless support of e-learning. (All tertiary education regulators are finalizing their updated curriculum in this regard).

b. Introduction of new a course type: "e-learning" in tertiary education curriculum - for courses that will only be delivered and assessed via e-learning methods. (The current course types in tertiary institutions are: theory, practical and fieldwork).

c. Segmentation of theory-based course contents to allow for blended learning (e.g. 60% physical learning and 40% e-learning).

d. Use of virtual labs, simulators, alternative-to-practical, augmented reality (AR), virtual reality (VR) for delivery of practical-based courses.

Digital Economy Policy Initiatives to Support e-Learning

a. Prioritize provision of solid, service and soft infrastructure to Nigerian tertiary institutions in line with pillars 3, 4 and 6 of the current National Digital Economy Policy and Strategy (NDEPS) 2020 – 2030.

b. Promote digital literacy and skills for lecturers and students in Nigerian tertiary institutions through special capacity development programmes. this can be modelled as a continuous professional development programme and continuous learning programme for lecturers and students respectively. This aligns with pillar 2 of NDEPS 2020 – 2030.

c. Facilitate access to and use of new and emerging technologies for e-learning in tertiary institutions.

d. Subsidize cost of telecommunication services for tertiary institutions and surrounding environments to reduce barriers for e-learning.

e. Promote "Collocation" of telecommunication infrastructure to increase broadband penetration in locations with tertiary institutions.

f. Reduce (or eliminate) taxation and charges applicable in the provision of telecommunication services to tertiary institutions.

g. Drive transition from use of conventional power to use of renewal energy (e.g. solar, wind, biogas, etc) for powering key ICT infrastructure in tertiary institutions. This will enhance access to electricity to promote sustainable e-learning.

h. Encourage and promote strategic domestic and international partnerships aimed at providing ICT tools for lecturers and students at subsidized rates.

i. Introduction of specialized annual programs (such as Competitions, Technology Fairs and Expos) that will strengthen the linkages between government, academia and industry in technology enhanced learning.

j. Introduction of a ranking and reward system to recognize compliant and innovative tertiary institutions in the e-learning space.

Conclusion

There has been a paradigm shift in the teaching, learning and research methods used in Nigerian tertiary institutions. This transition was accelerated by the COVID-19 pandemic which exposed the limitations of traditional teaching methods. Digital education has become a new reality in the Nigerian education system. The integration of technology to learning will promote attainment of SDG 4: *"Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"*.

ICT tools, digital literacy, broadband and access to electricity are key determinants for use of ICT for teaching and learning. The technology-enhanced learning landscape in Nigerian tertiary institutions is currently marred by poor infrastructure, slow internet bandwidth, high internet access costs, digital literacy issues among others.

The developed conceptual framework for transition and sustainability of e-learning features key enablers (ICT facilities, Broadband Access and Digital Literacy) as well as sustainability components (Regulation & Policies, Curriculum Review). Cybersecurity is also essential to provide a safe cyberspace for lecturers and students. The implementation of this framework will help address the current limitations of e-learning and assure a reliable blended-learning regime in Nigerian tertiary institutions.

Recommendations

The recommendations are grouped per key stakeholder category and are enumerated as follows:

1. **Government**
   a. Increase budget allocation and public spending on education especially for provision of robust infrastructure.
   b. Drive policy formulation, implementation and enforcement to promote and sustain blended learning at all levels of education.
   c. Facilitate formulation of regulations to promote reduced taxation and charges for provision and access to telecommunication services in tertiary education locations.
   d. Sponsor R&D programmes for production of indigenous digital tools for e-learning.
   e. Promote and drive awareness on importance and benefits of blended learning.
   f. Drive implementation of the national cybersecurity policy.

2. **Tertiary Education Regulators**
   a. Fast track the update and introduction of new tertiary education curriculum which aligns with e-learning.
   b. Drive awareness on the National Policy on ICT in Education (2019) and OER Policy for Higher Education in Nigeria.
   c. The accreditation requirements for approval of new tertiary institutions should include existence of robust ICT infrastructure capable of supporting e-learning.
   d. Strengthen and enforce the accreditation checklist for existing Nigerian tertiary institutions to contain components that ensures ICT compliance and support for e-learning (i.e. infrastructure, personnel and actual usage).

e. Promote and drive awareness on importance and benefits of blended learning.

3. Tertiary Institutions

    a. Institute, implement and enforce a campus-wide ICT policy that supports e-learning.

    b. Increase ICT budget allocation and expenditure.

    c. Facilitate capacity building of current staff and students for improved digital literacy and skills.

    d. Proficiency in ICT should be one of the eligibility criteria for admission of new students into Nigerian tertiary institutions.

    e. Proficiency in ICT should be one of the eligibility criteria for employment of new lecturers by Nigerian tertiary institutions.

    f. Prioritize ICT infrastructure when applying for grants and interventions.

    g. Institute a reward scheme for ICT-compliant departments and faculties to promote adoption.

    h. Promote access to OER for students and lecturers.

    i. Seek external funding from developmental banks to provide key infrastructure aimed at accelerating transition to blended learning.

    j. Promote and drive awareness on importance and benefits of blended learning.

    k. Promotion of campus-wide cybersecurity policies and a strict compliance regime.

4. Lecturers and Students

    a. Embrace and adoption of e-learning as part of tertiary education.

    b. Conscious personal development in digital literacy and skills.

5. Telecommunications Industry

    a. Development and sustainability of telecommunication infrastructure especially in locations with tertiary institutions.

    b. Strengthen and sustain linkages with Academia via improved collaborations.

    c. Improve access to technology and telecommunication services via provision of ICT tools, interventions, special plans for academia and quick transition to new & emerging technologies.

    d. Effective Regulation of the telecommunication industry (consumer protection, consumer education, fair pricing, etc.).

    e. Promotion and constant improvement of cybersecurity of ICT and telecommunications infrastructure.