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Technology Professional Development for Nigerian Teachers: Shifting from Traditional to Digital Pedagogies

A Literature Review of Technology Professional Development for Nigerian Teachers in the Digital Age

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PDA675 – Technology, knowledge and learning: An introduction

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INTRODUCTION

The successful adoption of technology in education is often hindered by various barriers, particularly in developing countries like Nigeria, where infrastructural limitations, socioeconomic factors, and traditional pedagogical approaches can pose significant challenges. Ololube (2014) opines that teachers trained in today's Nigerian teacher education programs are not technologically equipped to meet the challenges of the 21st century and carry out their duties in line with global transformations in science and technologies. Existing curriculum designed for the training of student teachers in Nigeria does not include the practical usage of information technologies (ITs) and information systems (ISs) materials such as computers, software, slides, and overhead projectors. In situations where computers are provided, training is based only on theoretical models. Student teachers rarely come into contact with ITs/ISs instructional materials, including those in the department of educational technology proper. Current reality and the Networked Readiness Index (NRI) have shown that Nigeria's readiness to the adaptation of technology hasn't improved over the past 20 years, with Nigeria consistently ranking in the bottom 15th countries – even though Nigeria is listed as the highest internet consumer (Edo, Okodua, & Odebiyi, 2019).

In a 2005-2006 study by Global Information Technology (2005), the Networked Readiness Index (NRI) was used to measure the degree of preparation of 115 economies for participating in and benefitting from ITs/ISs development. Nigeria ranked 90th out of the 115 countries surveyed. The United States of America topped the list, followed by

> Singapore, Denmark, Iceland, Finland, Canada, Taiwan, Sweden, Switzerland and the United Kingdom. In a similar study of 104 countries in 2004 Nigeria ranked 86th (Global Information Technology, 2004). Thus rather than showing improvement, Nigeria's readiness is declining. (Ololube, 2006)

The lag in adopting technology into educational pedagogy today results in a less engaging learning experience for both teacher and learner – not inspiring and engaging enough for the learner, not intellectually stimulating enough for the teacher. Teachers are known to be at the forefront of innovations and as such should not shy away from the use of technology. The first step to ITs/ISs adoption is to evaluate current teacher training and professional development programs for both in-service and pre-service teachers.

Given the challenges facing the Nigerian public school system, we stand to benefit significantly from embracing educational technologies. Today's software solutions can streamline many mundane and daunting tasks, making education more efficient and accessible. Nigerian teacher education programs face numerous obstacles in implementing and integrating technology effectively, this literature review aims to identify and analyze the key hindrances to technology adoption in teacher training and professional development programs in a developing nation like Nigeria and explore potential strategies to overcome these barriers.

Methods

To find relevant sources for this literature review, I conducted a systematic search on the Gothenburg University library search engine. I employed a combination of keywords and search strings using Boolean operators (AND, OR) to refine the search results. The keywords used included "teacher training," "professional development," "educational technology," "ICT in

education," "teachers' attitudes" AND ("technology adoption" OR "digital tools" OR "online learning environments"), "technology PD," and "technology in Nigeria.", "information technology" "Nigeria" "education".

Initially, I screened articles based on their titles and abstracts to identify those relevant to the topic of technology professional development for Nigerian teachers and the barriers to technology adoption. I then reviewed the full text of the selected articles to assess their suitability for inclusion in the review. Only articles published in peer-reviewed academic journals and written in English were considered. Due to the limited research specifically focused on Nigeria, no strict date restrictions were applied; however, preference was given to more recent articles (published within the last 15 years) to ensure the review reflects current trends and research. A PRISMA flow diagram illustrating the search and selection process is included in the Appendix.

Results

For this literature review, a total of five articles were included:

- Ololube, N. P. The role of ICT in the transformation of the Nigerian education system: A case study of teacher education (2006)
- Ghavifekr, Simin; Rosdy, Wan Athirah Wan. Teaching and Learning with Technology: Effectiveness of ICT Integration in Schools (2015)
- Mishra, P., & Koehler, M. J. Technological pedagogical content knowledge: A framework for teacher knowledge (2006)
- The utilisation of e-learning facilities in the educational delivery system of Nigeria: a study of M-University Eze, Sunday Chinedu ; Chinedu-Eze, Vera Chinwendu ; Bello, Adenike Oluyemi Cham: Springer International Publishing International Journal of Educational Technology in Higher Education, 2018-09, Vol.15 (1), p.1-20, Article 34]

- Eze, Sunday. Determinant factors of information communication technology (ICT) adoption by government-owned universities in Nigeria (2013)

The selected papers employed a mix of qualitative and quantitative methodologies, including case studies, semi-structured interviews, and surveys with open-ended questions (qualitative), as well as numerical data collection and statistical analysis (quantitative). The research settings were commonly Nigerian universities and teacher training institutions, and the sample populations involved teachers, student teachers, academic staff, educational administrators, and pre-service teachers.

The selected articles agree on these common themes on hindrances to technology adoption in teacher training and professional development programs in a developing nation like Nigeria.

1. **Teacher Training and Skills**

The predominant theme in this literature review is the unanimous agreement that teachers do not have the required skills to successfully pivot to a technologically driven classroom (Eze et al., 2018). Pre-service teachers are taught introductory computer studies in institutions of higher education, and this is done theoretically with little to no practice of the concepts. These do not do well to prepare them for taking 21st century teaching. Teachers often note that cite their use of technology in the classroom has not been encouraged and that they have not been well trained in the use of ITs/ISs as teaching tools and a means for educational sustainability (Ololube, 2006),

2. **Infrastructural and Technological Barriers**

Several research highlight the lack of adequate infrastructure and access to technology as a major barrier to technology integration in Nigerian schools (Ololube, 2006; Adeyemo, 2010). This

includes limited availability of computers, internet connectivity, and high cost of ICT implementation force many Nigerian institutions to ignore effective use of ICT solutions and use resources for other purposes that promise faster returns. Electricity supply in Nigeria accounts for about 80 percent below expectations; thus, only about 20 percent Nigerians has stable power supply ([3] Akpan-obong, 2007; [10] Baker, 2008).

3. Inadequate Technical Support

The lack of adequate technical support and maintenance for technology infrastructure can further hinder the effective use of technology in teacher training and professional development. Some teachers feel the urge and motivation to use ICT in teaching but there is lack of supports from the school top management that hinder and discourage them from using ICT (Ghavifekr & Rosdy, 2015).

4. Attitudinal and Pedagogical Barriers

Older teachers may be resistant to change or hold negative attitudes towards technology, viewing it as a threat to traditional teaching methods (Ertmer, 1999). This can hinder their willingness to adopt and integrate technology into their classrooms. The varying levels of digital literacy among teachers can also pose a challenge to technology adoption (UNESCO, 2013). Teachers with limited digital skills may feel less confident and motivated to integrate technology into their practice. Teachers might lack the pedagogical knowledge and skills to effectively integrate technology into their teaching practices (Mishra & Koehler, 2006). They may struggle to find relevant digital resources or design engaging technology-enhanced learning activities.

5. Corruption

The study revealed that embezzlement is the most significant ICT adoption barrier. Corruption breeds embezzlement, misappropriation, and other social vices that impede socio-economic growth. Previous studies ([22] Dike, 2005; [42] Ojukwu, 2006) and recent ones ([6] Apulu et al. , 2011) confirm this finding as they suggest that corruption is almost the way of life of Nigerians. Often money meant for improving teaching standards (investment in ICT) is siphoned.

Discussion

Nigeria is a complex society with numerous challenges preventing the successful use of ITs/ISs instructional materials within the education sector, but it also presents significant opportunities for change and development. The findings of this study revealed that here is a scarcity of research surrounding this topic. The limited research, (very few done in recent years) means that Nigeria is not becoming a key player in the field of technology nor would the education sector pivoting into an ICT focused learning.

Looking forward, these studies have suggested several key areas for improvement and i would like to add that, the support system for teachers, as highlighted by Ghavifekr and Rosdy (2015), requires a multifaceted approach. Beyond technical support teams, there's a need for peer mentoring programs and collaborative learning communities. These support systems should facilitate knowledge sharing and provide continuous assistance as teachers navigate the challenges of ICT integration.

Cultural context plays a crucial role in successful implementation. The adaptation of ICT must consider local teaching methods and cultural attitudes toward technology. This cultural sensitivity ensures that technological integration enhances rather than disrupts effective traditional teaching practices. In the Nigeria context, which is not fully accepting of technology, there needs to be a more simplified way of teaching in-service teachers especially the older generation, which makes up more than half of the teaching population how to use modern technology.

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