Chapter 9
Increasing Teacher Educators' Access and Use of Instructional and Web-Based Technologies in Sub-Saharan Africa:
Findings From a Mixed Method Study

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ABSTRACT

While teacher educators in Sub-Saharan Africa have increased access to information and communication technology (ICT), there is a lack of empirical research that describes the detail of educators' use of technology. This chapter addresses the gap in the literature with an exploratory mixed method study in a region of Nigeria. Researchers developed a survey to collect quantitative data from 190 teacher educators and added data from 10 interviewees to verify and the survey findings. The survey assessed the types of technologies in use and the demographics of teachers who use them. As expected, use is dependent on access, and overall access was high. Demographic differences in use were not great, but women were slightly more accepting than men, and more recent graduates more accepting than older ones. Teachers overall were moderately comfortable with technology. Researchers did not collect data about enabling factors like technical support or professional development. This suggests that next steps would be to define instructional software and assess technical support needs.

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INTRODUCTION

In recent decades, the information and communication technology (ICT) industry that has developed steadily since the 1970s has seen exponential growth. This growth has had positive effects in industry and government, not the least in the field of education. According to Thomas (2016), ICT growth has compelled educational leaders to adopt technology in education. To this end, the Nigerian government launched several initiatives to provide educators with access to technology across all levels of education (Garba & Alademerin, 2014). The focus of this chapter is to provide insight into how educators use ICTs for teaching and learning and to describe efforts of the Nigerian government and other education industry stakeholders to provide access to (ICT) infrastructure for sustained educational development throughout the country. We begin this chapter with a brief introduction to the background context of technology in Nigeria, followed by a synthesis of the literature on educators' access to ICTs, and the increased use of ICT tools for teaching. We then describe the goals, the research questions, and the methodology, followed by findings and discussion.

BACKGROUND AND CONTEXT OF TECHNOLOGY INTEGRATION IN NIGERIA

Over the course of history, Nigeria has faced challenges integrating technology into education. These challenges include lack of access to modern ICT equipment across all educational institutions (primary, secondary, and tertiary), educators' lack of knowledge and skills to use ICTs for learning, and limited access to technology-related professional development for educators (Garba, Ranjit-Singh, Yusuf, & Ziden, 2013; Onyia & Onyia, 2011; Owolabi, Oyewole, & Oke, 2013). These challenges are not unique to Nigeria; they are prevalent in other Sub-Saharan African countries as well. For example, Buabeng-Andoh (2012) reviewed teachers' adoption and integration of ICT in Ghana and found that limited access to ICTs and teachers' lack of ICT skills and confidence are among the major barriers to ICT use in teaching and learning.

Nigeria has a total of 95 public universities (NUC, 2019). To meet national development goals (Ibrahim, 2019), the federal government in 1993 Tax act and as amended in 1998, launched strategic initiatives through the Educational Trust Fund (ETF), Tertiary Education Trust Fund (TETFund), and National Information Technology Agency (NITDA). The aim of these initiatives was to improve the country's education system and enhance technology integration by providing access to ICT infrastructure which include computers, overhead projectors, optical fibres, fax machines, and high-speed Internet across campuses for educators and students (Apagu and Wakili, 2015). Additionally, setting up professional development venues like workshops and seminars to enhance educators' ability to integrate technology into teaching, and funding technology-related initiatives for the sum of N161bn in 2019 ("Buhari Approves N161bn," 2019, para.1). The following sections review literature on access to ICTs in education, and how some educators have made use of them for improved learning outcomes.

Review of Related Literature

The adoption of technology in education has the potential to empower educators and students across educational settings (Ibrahim, 2019). In Nigeria, there is a growing access to technology across all tiers of education, and educators make limited use of technology. However, this is changing recently, educa-