Chapter 16
Technology Integration in Teacher Education: Implications for Policy and Curriculum Reform

Charity Mukiri Limboro
Kenyatta University, Kenya

Ephantus Micheni Kaugi
Kenyatta University, Kenya

ABSTRACT
This study examined the availability of computers and internet in the classroom or elsewhere at teacher colleges, teacher preparation and training in technology integration, as well as trainers’ use of technology in classroom instruction. A survey questionnaire was distributed randomly to 63 teacher trainers from three public and one private teacher training college in Kenya. The data was analyzed descriptively using SPSS software. The results indicated that technology integration at the classroom level was too low due to lack of computers and internet access in the classrooms. Teacher trainers were inadequately trained in information and communication technology integration and therefore poorly equipped to integrate technology in the classroom. The study concludes that teacher colleges were not adequately prepared for ICT integration in teaching and learning. It is recommended that teacher colleges’ ICT infrastructure be improved and teacher trainers’ capacity on ICT integration be developed for the success of the current curriculum reforms.

INTRODUCTION
In the 21st century availability of computers and the Internet in learning institutions have improved and this has led to shift of focus from availability of the technology infrastructure to technology integration in classroom instruction. Information and Communication Technology (ICT) integration in teaching and learning refers to use of technology tools in general content area in classroom instruction in order

DOI: 10.4018/978-1-7998-1461-0.ch016
to enhance students learning and problem solving skills. However, availability and access to technology is intertwined with technology integration in the sense that, trainers are more likely to integrate computers and the Internet into classroom instruction if they have access to adequate tools and connections (Smerton et al, 2000). Globally, many governments have heavily invested in ICT to improve teaching and learning in schools. In spite of all these investments on ICT infrastructure and teachers capacity building to improve quality of education, integration of technology in teaching and learning have been limited (Buabeng-Andoh, 2012; Hinostroza, 2018).

More than ever before, teachers are expected to integrate technology in the classroom instruction so as to facilitate students to learn better. Empirical evidence attests that appropriate use of technology makes learning more meaningful and fun. It also improves learners’ engagement, knowledge and retention of content. ICT- aided education has the potential to develop students’ decision-making and problem solving skills, data processing skills, and communication capabilities (Whitworth & Berson 2002). We are in the digital age where technology is virtually everywhere including our homes, places of work, and social places making it indispensable. Digital devices such as mobile phones are affordable across the social divides which have gone a long way to support access to current and real time information and knowledge which can be used appropriately to enhance learning (Apkan, 2002; Bork, 2002; Dwyer, Ringstaff, and Sandholz, 1990; Kian-Sam Hong, Abang Ahmad Ridzuan and Ming-Koon Kuek, 2003; Lee and Dziuban, 2002; Thompson, 2003). As a result, learners are already ahead of the teachers in regard to use of technology and this makes it imperative that pre-service teacher training courses should incorporate technology integration in teacher training to empower teachers.

Generally, technology has changed the way we do things because with technology information is now accessible by a click of a button. One key benefit of digital literacy and technological integration is the cultivation of the 21st century skills which are collaboration, communication, creativity and critical thinking. Furthermore, we are in knowledge-based economy that necessitates a workforce that is skilled in the use of technology to gain the necessary competitive edge at the global level. However, technology integration in education requires substantial resource investments and proper planning.

**Teacher Preparation**

In the digital age, there is need to embrace technology integration in order to prepare teachers for the digital workplace. According to ISTE (2000a) a successful school provides integrated technology experiences for the students in order to: (i) increase their technological capabilities; (ii) seek, analyse and evaluate new information; (iii) become problem-solvers and decision-makers; (iv) use tools creatively and effectively to assist them in decisions; and (v) become communicators, collaborators, publishers and producers.

Technology should be an integral part of teacher preparation programs. This will support teachers to design learning environments and experiences that leverage digital tools and resources that maximize students’ learning outcomes (Atheya et. al 2016). If well trained in ICT integration, teachers can play a key role in meaningful use of technology in their teaching to enhance learning because teachers tend to teach the way that they were trained (Ball, 1990, Lortie, 1975). Consequently, teacher preparation programs should not simply offer a course in educational technology, but also model effective use of technology in teaching of other courses so as to prepare teachers to integrate technology in the world of work.
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