

Ict Integration Framework Design For Primary Schools In Bundibugyo District, Uganda: Design And Validation Of An Ict Integration Framework

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Abstract

E-learning integration in to classroom teaching can make pupils' learning more learner-centered and participatory than the conventional teacher-centred learning approach. Regrettably, in the situation where the majority of primary schools in Uganda still use the teacher-centered approach to learning, there is paucity of studies conducted in primary schools in this regard. I set out to: (1) design a framework for ICT integration based on the factors that affect integration in primary schools in Bundibugyo, Uganda; and (2) validate the framework for integrating e-learning in primary schools in Bundibugyo District, Uganda. The study primarily employed a cross-sectional research design. Data were gathered primarily by survey questionnaire administration and key informant interviews. Quantitative data were analyzed using SPSSv22, while qualitative data were thematically analyzed. The study shows that an appropriate framework for successful integration of ICT in primary schools emphasizes three elements. That is, readiness for the school administrator or policy maker, readiness for the classroom instructor and readiness for learners: The key conclusion is that, the roles of each of the aforesaid actors needs to be clearly defined if ICT integration in primary schools in Bundibugyo district is to be successful. ICT integration, ICT Integration framework, ICT in primary schools, ICT framework design, ICT in Bundibugyo, Validating ICT Framework, Validation of ICT Framework

Key words: Ict Integration, Framework Design and Primary Schools

Introduction

This study contributes to the view that integrating e-learning into classroom instruction can make student learning more student-centered and participatory than conventional teacher-centered approaches to learning. My questions are: (1) How can a framework for ICT integration be designed based on the factors that influence integration in primary schools in Bundibugyo, Uganda? (2) Is the proposed framework for integrating e-learning in primary schools in Bundibugyo district applicable? Knowledge of these factors could contribute to efforts to address the unfortunate situation where most primary schools in Uganda, including Bundibugyo, still use teacher-centred teaching. This approach engages students less and makes

them more passive consumers of information disseminated by teachers.

ICT integration theory offers that due to rapid technological and social changes that require lifelong learning, e-learning is an increasingly preferred alternative to conventional classroom learning (Zuleika, 2015). It has become an important part of the routine environment of education and training, primarily because it allows more students to access learning materials and provides students and teachers with unprecedented flexibility and convenience (Burden & Shea, 2013). Thus, educational systems are looking for e-learning programs that would help take advantage of these benefits and significantly improve the

Received: 16.01.2024

Accepted: 25.01.2024

Published on: 31.01.2024

quality and content of education. However, integrating e-learning into existing basic education systems can be challenging in developing countries (Onyango, Chelule, & Wesonga, 2015).

Empirical studies conducted in Uganda identify several factors that hinder the full integration of e-learning into the Ugandan education system. However, there is a lack of studies on the appropriate ICT integration framework that can be used, especially in primary schools. Available studies are primarily focused on the integration of eLearning in secondary and tertiary schools (Kituyi & Tusubira, 2013; Kigozi, H., Danielson, Tusubira, & Vesisenaho, 2011; Okidi, 2006). These identify factors that include, but are not limited to: high infrastructure costs and other constraints, socio-economic and technological conditions, lack of a systematic approach to teaching and learning, awareness and

attitudes towards digital technologies, insufficient administrative and technical support, challenges in ICT development complaints and little expertise in using digital technology tools. Other factors are: unfavourable access to technology, limitation of content quality in eLearning and multimedia technology, and lack of stakeholder engagement (Kimwise, Mudaheeranwa, & Mugabirwe, 2019). Therefore, the objective of this study was to design a framework for ICT integration for primary schools in Bundibugyo District. In this paper, I address the second and third specific objectives of the study: to propose a framework for ICT integration based on the factors that influence integration in primary schools in Bundibugyo District; and validate a framework for e-learning integration in primary schools in Bundibugyo District.

Problem Statement

The study aimed at ict integration framework design for primary schools in Bundibugyo district, uganda: design and validation of an ict integration framework

Main Objective

To formulate the ict integration framework design for primary schools in Bundibugyo district, Uganda.

Related literature

Theoretical framework

This study is embedded in the E-learning integration model (Newton & Ellis, 2006). The model identifies key factors, including organizational priorities, instructor roles, student needs, and the learning environment, that contribute to an integrated e-learning culture. It also assumes that, given that the e-learning environment is not value-free, it is possible to understand the competing priorities and discourses that influence how e-learning effectiveness is constructed and defined.

The study considered the e-learning integration model to be suitable for the advancement of this study. It first looks at how teachers can develop and apply technological pedagogical content knowledge (TPACK) in their teaching. Second, it considers students' readiness to accept e-learning, such as Affective (learning) in terms of attention (excitement, curiosity, interest) or trust (positive expectation, persistence and challenge). Third, it addresses the issue of a sustainable learning environment, such as organizational priorities such as

Received: 16.01.2024

Accepted: 25.01.2024

Published on: 31.01.2024

administrative readiness in terms of e-learning maintenance [i.e. financial support for the purchase of e-learning resources (hardware and software), technical support such as teacher training, and management support through the design of an institutional e-learning policy].

E-Learning

E-learning is “anything delivered, enabled or mediated by electronic technology for the explicit purpose of learning” (Hicks, 2001, p. 75). Simply put, e-learning refers to learning without the use of paper learning materials, which involves using technology to teach. It is a direct alternative to classroom instruction, traditional instruction, or personal instruction. Several other terms are used to cover e-learning such as online learning, virtual learning, networked and web learning (Al Jardani, 2020; Goyal, 2012). In the e-learning system, students can communicate with various learning materials (text, sound, images, video, etc.) via the Internet at any time and from anywhere. In addition, students can interact with teachers and classmates both individually and in group discussion using bulletin boards, instant messaging, and video conferencing (Al-Ammari & Hamad, 2009).

There are two categories of e-learning systems: synchronous and asynchronous. Synchronous e-learning mimics the classroom, meaning that teaching takes place in real time and connects instructors and students through audio or video streaming or through a chat room. Asynchronous e-learning allows students to access pre-prepared software in their own time, work at their own pace, and communicate with a cyber instructor or even other students via email or other social media. In addition, asynchronous e-learning is reflected in how the school's students use the web; procedures that involve students connecting and downloading information. Asynchronous e-learning programs are more popular because they are flexible, customizable, easy to use, and most importantly, cost-effective (Etherington, 2008).

Methodology

The study conducted this study using a cross-sectional research design, which is suitable for collecting and analysing data from one point in time (Creswell & Creswell, 2018). The study employed stratified random sampling to select 12 (out of over 157) primary schools in Bundibugyo district, Uganda. Using classroom and teachers registers as sampling frames, The study employed simple random sampling to select the study participants for the survey. The study purposively selected the school's head teacher (or the deputy) for key informant interviews due to their in-depth and privileged knowledge. Data were collected from 189 respondents. Of this number, 117 teachers and 60 learners responded to the survey questionnaire, and 12 head teachers were key informants. The internal consistence of the survey questionnaire was acceptable as Cronbach's Alpha (α) ranged from 0.71 – 0.89 for the different variables (Creswell & Creswell, 2018). Interviews were audio-recorded. I ensured trustworthiness of the data through data source and methodological triangulation (Creswell & Creswell, 2018). Quantitative data were entered and cleaned using IBM SPSS v22. Then, the study examined the data set for extreme univariate outliers using normality plots with tests and accordingly corrected the errors. Thereafter, the study conducted quantitative data analysis. Specifically, the study produced frequency distributions summarising social demographic characteristics of the respondents, the preparedness of staff in integrating ICT and availability, accessibility and usability of ICT resources in schools.

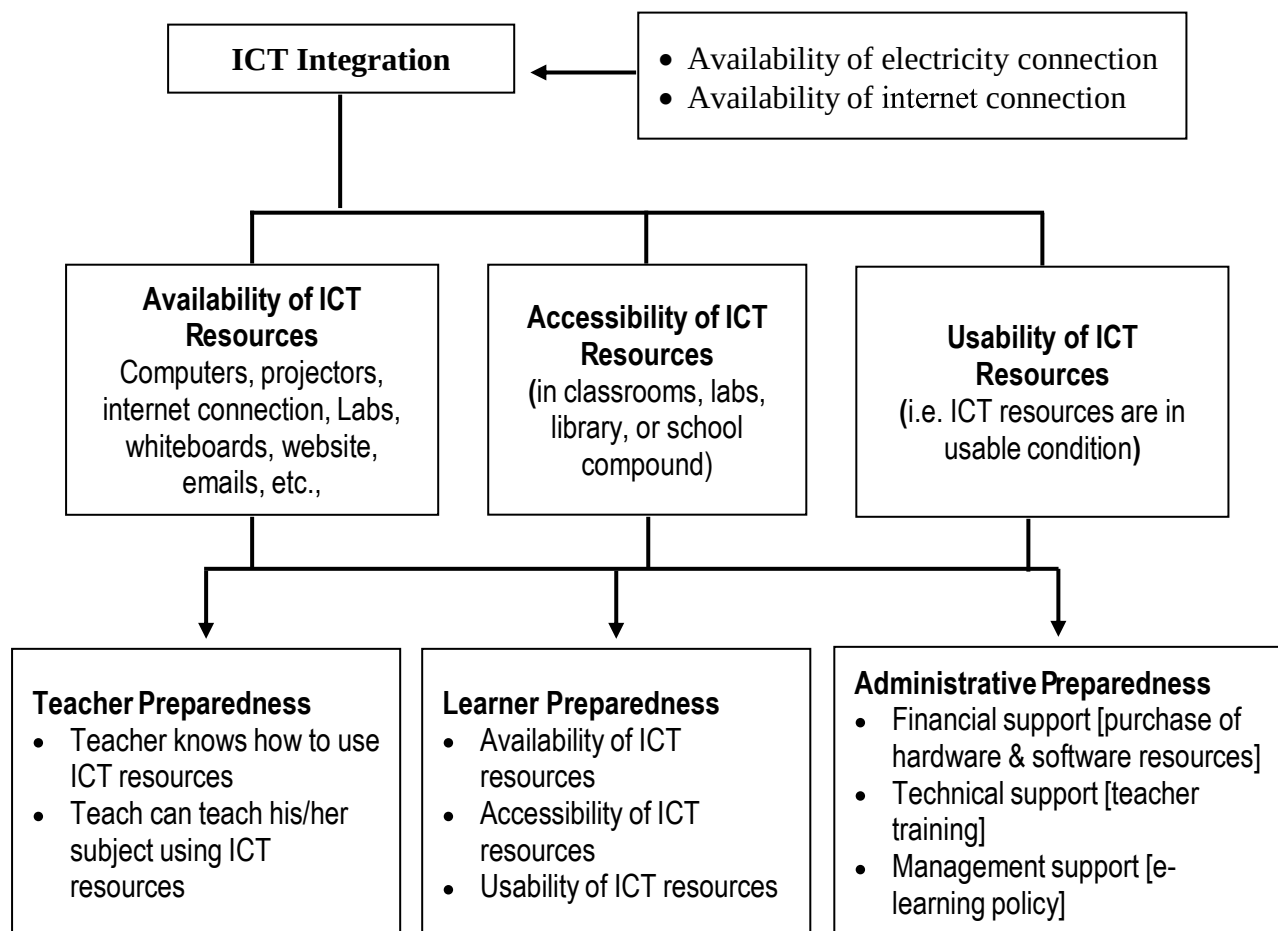
Received: 16.01.2024

Accepted: 25.01.2024

Published on: 31.01.2024

Results

Designing a Framework for ICT Integration



The framework developed to aid the ICT Integration is shown as Figure 1. It is based on the factors that affect the integration in primary schools in Bundibugyo, Uganda.

Figure 1: Developed Framework for ICT Integration in Primary Schools in Bundibugyo District

Validating the Framework for Integrating E-Learning

Validation of the developed framework for integrating e-learning in primary schools in Bundibugyo District revealed the following: First, availability, accessibility and usability of ICT resources, and availability of electricity and internet connection was paramount in enabling e-learning. Second, teacher competence in using ICT technologies (e.g. internet and whiteboard) and resources (e.g., projector and computer) to teach facilitated e-learning. Third, the interest, curiosity, motivation, familiarity with and confidence of learners in using ICT

Received: 16.01.2024

Accepted: 25.01.2024

Published on: 31.01.2024

resources and technologies, aids successful adoption of e-learning. Lastly, and perhaps most importantly, sustained administrative support towards ICT integration in form of favourable ICT policy guidance, provision of appropriate ICT resources and technologies, and ICT training for personnel.

Discussion

In this article, I discuss findings in line with two study objectives: to design a framework for ICT integration based on the factors that affect the integration in primary schools in Bundibugyo, Uganda; and to validate the framework for integrating e-learning in the primary schools in Bundibugyo District, Uganda.

The ICT integration framework for primary schools that was developed during this study and its subsequent validation is consistent with previous studies. Basically, it emphasises the proposition that successful ICT integration in teaching and/or learning requires readiness of the teacher, learner and school administrator or policy maker (Pultoo, et al., 2020; Ramirez-Montoya, Mena, & Rodriguez-Arroyo, 2017; Wei, Y.P., Kannan, & Maulod, 2015).

Just like previous studies conducted elsewhere, the present study showed that availability, accessibility and usability of ICT resources, electricity and internet connection were vital for components of an ICT integration framework for primary schools. In addition, ICT competent and skilled personnel, and a supportive pro-ICT school administration or policy makers were other crucial elements of an ICT framework (Omariba, 2020; Kiugu, 2020; Isaboke, 2018; Tsindoli & Opati, 2018). The organising role of school administration or school policy makers seems to be the glue that binds these key elements of the ICT framework together. To do that, they need first the desire and then to find the financial resources.

Conclusion

Overall, an appropriate ICT integration framework for primary schools should have clear roles for the school administrator or policy maker, the classroom instructor and the learner. Most importantly, they should all be motivated to execute their roles if ICT integration in primary schools is to be successful. Finally, it is noteworthy that this study was carried out in only one district of Uganda. Therefore, generalisation of the findings should be applied with thoughtfulness.

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Received: 16.01.2024

Accepted: 25.01.2024

Published on: 31.01.2024

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Received: 16.01.2024

Accepted: 25.01.2024

Published on: 31.01.2024

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