

Ict Integration Framework Design For Primary Schools In Bundibugyo District, Uganda: Factors Affecting Ict Integration

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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. Accordingly, I set out to investigate the factors affecting ICT integration situation 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 three primary factors affected ICT integration in primary schools in Bundibugyo District: the level of teacher preparedness, learners' preparedness to use integrated ICT, and administrative preparedness to support integrated ICT. Inadequate funding for ICT training of staff and purchase of ICT equipment and technologies was a key underlying reason. The key conclusion is that, poor ICT readiness or a complete lack of it by teachers, learners and school administrators was affecting ICT integration in primary schools in Bundibugyo district.

Key Words: ICT integration, ICT Integration framework, ICT in primary schools, ICT framework design, ICT in Bundibugyo

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 question is: What factors influence the situation of ICT integration in primary schools in Bundibugyo District, Uganda? 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 involves fewer students and makes them more

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). Educational systems are therefore looking for e-learning programs that

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will help them solve these challenges and significantly improve the quality and content of their education. However, integrating e-learning into existing basic education systems can be challenging in developing countries (Onyango, Chelule, & Wesonga, 2015). Empirical studies identify several factors that hinder the full integration of eLearning into Uganda's education system. However, studies in primary schools are few. 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

Problem Statement

The study aimed at ict integration framework design for primary schools in Bundibugyo district, uganda: factors affecting ict integration.

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. I consider 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

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 insufficient stakeholder engagement (Kimwise, Mudaheranwa, & Mugabirwe, 2019). The aim of this study was therefore to design an ICT integration framework for primary schools in Bundibugyo District. In this article, I address the first specific aim of the study; to investigate the factors affecting the situation of ICT integration in primary schools in Bundibugyo district.

(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 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 in designing 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

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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). The readiness of teachers to accept and effectively use ICT in teaching is, together with their digital competence, a central element of the integration of ICT in education (Pultoo, et al., 2020; Ramirez-Montoya, Mena, & Rodriguez-Arroyo, 2017; Wei, Y.P., Kannan, & Maulod, 2015).

Empirical studies show that teacher readiness and the integration of digital technologies in the classroom created a significant correlation (Rokenes & Krumsvik, 2016). ICT readiness is an essential component of digital competence, which refers to attitudes or dispositions. Teachers' acceptance beliefs influence their acceptance and attitude towards the use of ICT in education, including their perceived readiness (Instefjord & Munthe, 2017). Therefore, teachers as classroom learning facilitators must be prepared to embrace a paradigm shift in learning and teaching due to technology integration (AvidovUngar & Shamir-Inbal, 2017).

Despite the advantages of the learning process brought by the integration of ICT in education, the readiness of teachers seems to be lacking

Methodology

The study used 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 was 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

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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. The study 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, I 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.

Results

Teacher Preparedness to Use E-Learning

Overall teachers in Bundibugyo District primary schools were not prepared to use e-learning technologies in teaching. In terms of proportions (Table 1), at least 85% of the teachers: did not have the knowledge and competence to use a projector; lacked Microsoft PowerPoint skills and exposure; lacked adequate internet usage skills and know how to teach internet usage to learns; were unable to teach students how to use a computer to solve academic problem; and couldn't use a whiteboard during their teachings. The inability of teachers to use e-learning technologies was primarily attributed to their lack of elementary ICT training.

Table 1: Teacher Preparedness to use Integrated E_learning

	Frequency	Percent (%)	Mean	Standard deviation (Std)
I can teach my subjects easily using a projector				
Strongly disagree	110	85.3	1.22	0.640
Disagree	14	10.9		
Agree	00	0.0		
Strongly agree	5	3.9		
Total	129	100.0		
I can easily teach students how to prepare a PowerPoint presentation				
Strongly disagree	112	86.8	1.17	0.470
Disagree	12	9.3		
Agree	5	3.9		
Strongly agree	0	0.0		
Total	129	100.0		
I can easily teach students how to search internet resources to get updated information about my subject area				
Strongly disagree	116	89.9	1.16	0.522
Disagree	8	6.2		
Agree	3	2.3		
Strongly agree	2	1.6		

Total		129	100.0		
I can teach students how to use a computer to solve academic problem (e.g. mathematics, geography maps etc.)					
Valid	Strongly disagree	114	88.4	1.17	0.532
	Disagree	10	7.8		
	Agree	3	2.3		
	Strongly agree	2	1.6		
	Total	129	100.0		
I can easily use a whiteboard during my teachings					
	Strongly disagree	113	87.6	1.17	0.486
	Disagree	10	7.8		
	Agree	6	4.7		
	Strongly agree	0	0.0		
	Total	129	100.0		

Source: primary data, 2021

Learners in Bundibugyo District primary schools were not prepared to integrate ICT in their learning. All learners reported absence of ICT resources in their school, which explained learners' inability to receive e-learning. The ICT resources identified as lacking included: computers, internet connection, accessories (e.g., projectors), whiteboards, school website, e-mail, and computer laboratories.

Generally, administrators of primary schools in Bundibugyo District were not prepared to support integrated e-learning. All school administrators reported that they didn't provide teachers with opportunities for ICT training. This is mainly because school administrators were not financially prepared to support ICT integration since they didn't have budgets for purchasing computer equipment, related technologies, hiring/training technical ICT personnel.

Discussion

Successful ICT integration in teaching and/or learning requires readiness of the teacher, learner and school administration (Pultoo, et al., 2020; Ramirez-Montoya, Mena, & Rodriguez-Arroyo, 2017; Wei, Y.P., Kannan, & Maulod, 2015). In this study, I investigate factors affecting ICT integration situation in Primary Schools in Bundibugyo District, Uganda. There was evidence that three primary factors affected ICT integration in primary schools in Bundibugyo District: the level of teacher preparedness, learners' preparedness to use integrated ICT, and administrative preparedness to support integrated ICT. Inadequate funding for ICT training of staff and purchase of ICT equipment and technologies was a key underlying reason.

This finding is consistent with similar previous studies (Omariba, 2020; Kiugu, 2020; Isaboke, 2018; Tsindoli & Opati, 2018). Lack of computers, limited access to internet, lack of support from administrators, and lack of ICT competence and skills are reported to hinder teachers from using integrated ICT in teaching (Omariba, 2020; Isaboke, 2018). Even where some teachers possess adequate ICT knowledge and skills

other factors such as inadequate ICT equipment, poor internet connectivity, missing or unreliable electricity and lack of ICT laboratories hindered the implementation of ICT in teaching/learning (Kiugu, 2020). In addition, some ICT integration training programs, only offer pedagogy, content and knowledge but not the technology, which makes integration a rarity in the classroom setting (Omariba, 2020). Studies further suggest that when teachers lack ICT knowledge and skills, they may actually resist the implementation of e-learning programmes (Tsindoli & Opati, 2018).

The teacher's readiness in terms of competency is particularly crucial in determining the direction (success or failure) of any educational program. Inadequate knowledge and skills in digital technology or complete lack of it delays progress or commencement, respectively, of digital-related educational objectives. When teachers are competent and accept ICT integration in teaching, classroom delivery of digital technology skills can be very effective in realizing the education needs of learners (Ramirez-Montoya, Mena, & Rodriguez-Arroyo, 2017; Wei, Y.P., Kannan, & Maulod, 2015; Pultoo, et al., 2020). Therefore, the ICT training of teachers needs to go beyond pedagogy and content and include the ICT technology required for digital learning integration. Only then will the readiness of teachers and e-learning integration in the classroom be achieved.

Conclusion

Overall, poor ICT readiness or a complete lack of it by teachers, learners and school administrators was affecting ICT integration in primary schools in Bundibugyo district. 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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