

Learner access to resources for eLearning and preference for eLearning delivery mode in distance education programs in Ghana

Emmanuel Arthur-Nyarko^{a,*}, Moses Githua Kariuki^b

^aCollege of Distance Education, University of Cape Coast – Cape Coast, Ghana

^bDepartment of Educational Communication and Technology, Kenyatta University – Nairobi, Kenya

KEYWORDS

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ICT

ABSTRACT

eLearning is a learning process which aims at creating an interactive learning environment through the use of computers and the Internet. This paper sought to investigate distance learner's access to resource for eLearning and its influence on preferred eLearning delivery mode. The study employed an analytical survey to collect and analyze data from 517 participants made up of 284 undergraduate and 233 graduate students from two distance education institutions in Ghana. However, 468 questionnaires were received and analyzed. The Chi-square Test of Independence was used in the data analysis. It was found that access to ICTs and access to electricity had a significant influence on learner's eLearning delivery mode preferences. However, Internet access did not significantly influence preference for eLearning delivery mode. The study recommended that the government should establish a scheme to supply affordable ICT devices to distance educations. In addition, Internet service providers in Ghana should provide reliable, affordable and accessible Internet to distance education students.

Introduction

There is a growing student demand for online courses in recent times. This has led to online learning in higher education becoming a major mode of delivery in today's technology-driven environment (Platt, Raile, & Yu, 2014). For example, in the USA, there is more demand for online courses compared to the demand for face-to-face courses (Kuo, Walker, Belland, & Schroder (2013). A similar trend is reported in other markets, as evidenced by the growing geographical distribution in the active membership of the International Council of Distance Education, and the Commonwealth of Learning.

* Corresponding author. E-mail address: earthur-nyarko@ucc.edu.gh

As witnessed in Ghana, in the last two decades, distance education (DE) has enjoyed high patronage and acceptance from both the working population and graduates from the senior high schools. It is seen as a model of education that takes knowledge right to the doorsteps of the learner. DE is being utilized not only to widen access to education quality education but also facilitate human resource development in the country (Addah, Kpebu, & Kwapong, 2012). Furthermore, Ghana's quest to transform the country into an information-rich, knowledge-based and technology-driven high-income economy and society was evident in the introduction of the Information and Communication Technology for Accelerated Development (ICT4AD) policy (Republic of Ghana, 2003). One of the policy objectives is to promote and encourage distance education, including electronic distance education and virtual learning, focusing on tertiary level education and training in all fields and disciplines to broaden access to educational and training resources and services to a larger section of the society.

The introduction of information and communication technologies (ICTs) in distance has made learning content available to learners anywhere and anytime. eLearning which comes from two words; electronic and learning, has blurred the transaction distance which existed in the first generation of DE, also termed as the correspondence learning. Falch (2004) argues that "eLearning can be facilitated by use of the Internet or other types of communication technologies but not necessarily. eLearning per se does not demand any type of online access" (p. 8). According to Nichols (2008), eLearning refers to the use of technological tools (primarily those that can be made available over networks such as the internet) for education. He further added that eLearning is pedagogy that is facilitated by digital technology and may be offline (and non-networked) technologies on CD-ROM or DVD. The current definition suggests that eLearning thrives on information and communication technologies, and the advancement in technology gives direction to e-learning (Addah et al., 2012). Therefore, learner's access to resources such as computers, the Internet, and other digital tools is vital in determining certain learner behaviors.

It has been proven in literature that learner preferences are critical to effective engagement in flexible delivery and resource - based learning. Student' s demographics and preferences have helped streamline the options available, particularly those that use digital learning formats on online platforms (Best Colleges, 2015). For online technologies to enhance student learning depends on many factors including student access to resources. Gillingham and Molinari (2012) are of the view that "the selection of various online technologies to best enhance student learning may be based on many factors including the learner's preferences and experiences" (p. 1). These preferences are could be influenced by certain key factors. Yet, much has not been done to determine students' preferences for eLearning delivery modes which are one way of meeting learners' needs and how learner access to resources influence their preferences. It is an undeniable fact that learning requirements and preferences of each learner tend to be different. Higher education institutions should make effort to determine students eLearning delivery mode preference in order to avoid students' mode preference mismatch. This paper investigates the influence of learner access to resources on preference for eLearning delivery mode in distance educations programs in Ghana. Specifically, the study addressed the following objectives:

1. To determine learner preferences of eLearning delivery mode in distance education programs.
2. To establish the extent to which learner access to ICTs influences preference of eLearning delivery mode in distance education programs.
3. To determine the influence of learner's Internet access on preference of eLearning delivery mode in distance education programs.
4. To find out how learner access to electricity influences preference for eLearning delivery mode in distance education programs.

Literature Review

eLearning Delivery Modes

The literature on eLearning delivery has shown two basic eLearning delivery modes. These are fully online and blended modes. In fully online mode, content is delivered to students through the Internet. All interactions between student and teacher are through the Internet. In this case, there are no face-to-face meetings. On the other hand, blended mode combines both event-based activities, including face-to-face classrooms, live e-learning, and self-paced learning. Singh (2003) argues that while fully-online involves a single mode of delivery, blended learning combines multiple delivery media that are designed to complement each other and promote learning and application-learned behaviors.

Access to ICTs in Distance Education

eLearning is sometimes referred to, as learning through digital contents requires digital devices for its implementation. There is the likelihood that students who have a higher level of access to digital devices such as computer, smartphones, tablets and the Internet would respond positively to eLearning delivery and the opposite is equally probable. Learners' financial issues may also influence student's access to digital devices. Beamish, Armistead, Watkinson, and Armfield (2002) identified the high cost of computer devices, lack of availability and access to computers or necessary devices as barriers relating to the technology itself. Place of access to ICTs has been also explored in literature. Zhao and Frank (as cited in Al-alak & Alnawas, 2011) found

that the lack of access to the Internet from home was the main barrier to the use of technology in the teaching process. Although their finding was related to teaching with technology, the story would not be different from students' access and use of technology in distance education.

Factors such as social interaction, academic skills, technical skills, learner motivation, time and support for studies, cost and access to the Internet, and technical problems have been identified as part of the key factors that represent barriers online learning uptake. Henderson (2005) investigated the role of computer and Internet access in business students' acceptance of eLearning technology using 583 Business students in the USA. The study employed a quantitative research approach through survey instruments to collect data. The Technology Acceptance Model (TAM) was applied to design the survey instruments. The results revealed that computer access had no significant influence on students' eLearning acceptance. Computer access explained 1.2% of the variance in eLearning acceptance. However, this finding does not dispute the fact that there was a correlation between computer access and eLearning acceptance rather it had an insignificant influence on eLearning acceptance. This result might have been arrived at because of the locale of the study, USA, where access to technology is not a challenge due to advancement in technology.

Access to Internet and eLearning delivery mode preference

The Internet plays a pertinent role in widening learner access to quality education. Availability of the Internet has transformed the learning environment into a learning community where knowledge is transacted and negotiated. Access to the Internet is therefore vital in ensuring constant engagement with the community of learners.

The significance of Internet access to eLearning delivery mode preference is closely related to computer access. Most eLearning systems are delivered through the Internet though that is not the only mode by which eLearning could be made available to students. Thus, the contribution of Internet access to eLearning has been given precedence in literature. In the study of how Internet access affects business students' eLearning technology acceptance in the United States, Henderson (2005) used TAM as a theoretical model. The results revealed that Internet access did not explain significant variance in perceived eLearning usefulness. Students' access to the Internet failed to influence students' belief that it would improve performance in class. On the other hand, it was reported that Internet access significantly influenced the student's ease of eLearning use. This suggests that Internet access impacts on the extent to which student expect eLearning to be easy to use.

There is the possibility that student's budget constraint could determine student's preference of eLearning delivery mode. Ono (2005) conducted a case study of East Asia and established that individuals with higher incomes were more likely to own a computer at home. This revelation was supported by Henderson (2005) who found that socioeconomic factors such as higher incomes might influence eLearning acceptance through computer and Internet access. Cutler, Hendricks, and Guyer, (as cited in Cheah & Chun, 2013) buttressed these findings and indicated that "individuals from high-income families were more likely to live in a household with a computer" (p. 58). Conversely, it was found in Malaysia that, income did not have any significant impact on computer ownership (Loke & Foo, 2010). From the foregoing discourse, it could be noticed that family income might influence eLearning delivery mode preference either directly or by proxy.

Access to Electricity and Preference for eLearning Delivery Mode in Distance Education

One of the issues that constrained Africa's eLearning development has been the access to reliable power supply. Most eLearning installations in Africa and other developing countries are suffering from lack of a sustainable source of electricity supply. The challenge has the potential of influencing students' preference for eLearning delivery mode. Esterhuysen and Scholtz (2015) conducted a qualitative study in South Africa to develop a barrier to eLearning framework for developing countries. They identified fluctuating and unreliable electricity, lack of financial support, eLearning content development cost, computer ownership and availability, internet access, and computer competency as resource factors influencing eLearning uptake. Similar findings were noted in studies conducted by Leary and Berge (2007), and Ajadi, Salawu, and Adeoye (2008).

Methods

Study design

The study utilized analytical survey design. This research design is perceived as authoritative by researchers and allows for both descriptive and inferential statistics to be used in data analysis (Saunders, Lewis, & Thornhill, 2009). This design was chosen because it enabled the researcher to examine and explain relationships between variables so as to investigate the influence of learner access to resources for eLearning on eLearning delivery mode preference in distance education programmes in Ghana.

Research participants

The current study employed multiple sampling techniques to sample 517 participants from two distance education institutions in Ghana. The participants comprised 284 undergraduates and 233 graduate (masters) students. The number completed the study questionnaires. Participants were selected from study centers in four regions, namely; Central, Ashanti, Greater, and Northern.

Study instrument

A survey questionnaire was employed in data collection. The questionnaires had closed-ended questions and two main sections: A and B. Section A elicited participants background data while section B collected data on learner's access to resources for eLearning and preferred eLearning delivery mode. Most of the questions were categorical questions with simple Yes/No responses. Preference for eLearning delivery mode was measured on a categorical scale: blended, undecided, and fully-online mode.

Data collection

Participants were accessed at their study centres where they attend face-to-face sessions. Data were collected with the support of two trained research assistants. The randomly selected completed questionnaire. Participants took an average of approximately ten minutes to complete the questionnaire and were immediately collected for data analysis. Those who were not able to complete within the time given were allowed up to the end of class to complete and return the questionnaires. Out of the 517, a total of 468 questionnaires were duly completed and analyzed. Some respondents failed to return their questionnaires while others questionnaires contained many errors such as double marks and non-response of some items. The study, therefore, achieved a 90.5% response rate.

Data analysis

The data from the survey was analysed using statistical package for social sciences (SPSS) version 20. The first objective was addressed using descriptive statistics such as frequencies and percentages. The rest of the objectives were addressed using the Chi-square test of independence with Cramer's V.

Results

A descriptive analysis was conducted to explore learner's access to resources for eLearning. The first was learner access ICTs and the results were as shown in Table 1.

Table 1: Learners' Access to ICT Devices for ELearning

ICT devices	Yes	%	No	%
Computer	305	65.2	163	34.8
Smart Phone	367	78.4	101	21.6
iPad/Tablets	172	36.8	296	63.2
MP3/4 devices/iPod	43	9.2	425	90.8
External storage devices	403	86.1	65	13.9

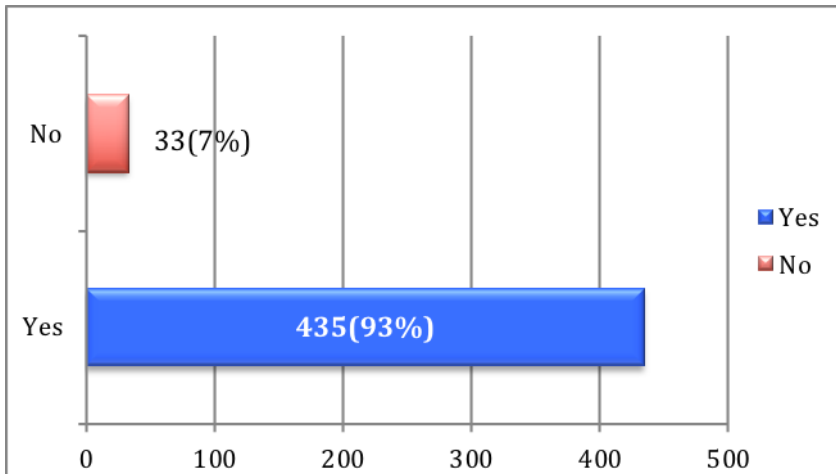
It is notable that most of the students 367 (78.4%) had access to smartphones compared to 305 (65.2%) who had access to computers. Besides, 172 (36.8%) and smaller number 43 (9.2%) indicated that they had access to iPads/Tables and MP3/4 devices respectively (Table 1). Majority of students (86.1%) indicated that they had external storage devices such as flash drives and external hard drives. It must also be noted that some students had access to more than one ICT devices. For instance, some had access to both computer and smartphone while others had access to a computer and a Tablet or an iPad. It is evident that smartphones are gradually replacing the use of personal computers in education due to the mobile nature.

Further, students were requested to indicate where they had access to computers. The item was multiple response types and attracted yes/no to the options provided. It was revealed that the majority (38.9%) of students had access to computers at home while 28.8%, 18.9%, and 10.8% accessed computers at work, Internet café, and school respectively. A few others also accessed it at local community ICT centres. This finding agrees with the study conducted by Tagoe (2012) at the University of Ghana. Tagoe found that 65.5% of students had computers of many kinds. The study also noted that students who did not own computers had access to computers at places such as cybercafés, workplace, and school.

Access to the Internet

Students' access to the Internet was measured using a dichotomous yes/no response type of item. Respondents were requested to indicate 'Yes' if they had access to the Internet and 'No' if they did not (Figure 1).

Figure 1: Students' access to the Internet

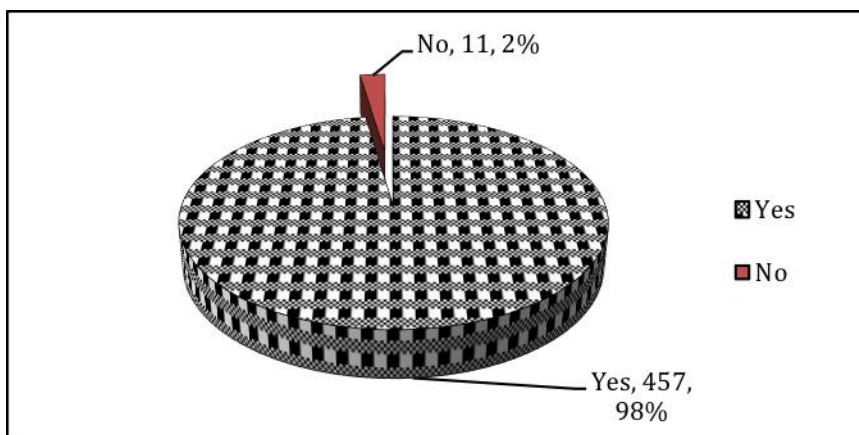


The analysis of students' access to the Internet (Figure 1) revealed that more than three-quarters of the respondents (N=435, 93%) had Internet access as compared to 33 (7%) who had no access to the Internet. This shows clearly that students had a higher level of Internet access in diverse places and devices. Majority of students reported they accessed the Internet at home and on their mobile devices while a few indicated that they accessed the Internet at Internet cafes, at work and community ICT centres. With regard to frequency of Internet access, more than half of the students (N=276, 59%) reported that they had access daily while 71 (15.2%), 55 (11.8%), 21 (4.5%) and 16 (3.4%) indicated they accessed the Internet several times a week, once or twice a week, once or twice a month, and a few times in a year respectively.

Access to electricity

This study sought to find out learners' access to electricity. Access to electricity was measured using simple dichotomous yes/no response item. Learners were asked to indicate 'yes' if they had access to electricity and 'no' if they had no access. The results are presented in Figure 2.

Figure 2: Students' access to electricity for eLearning

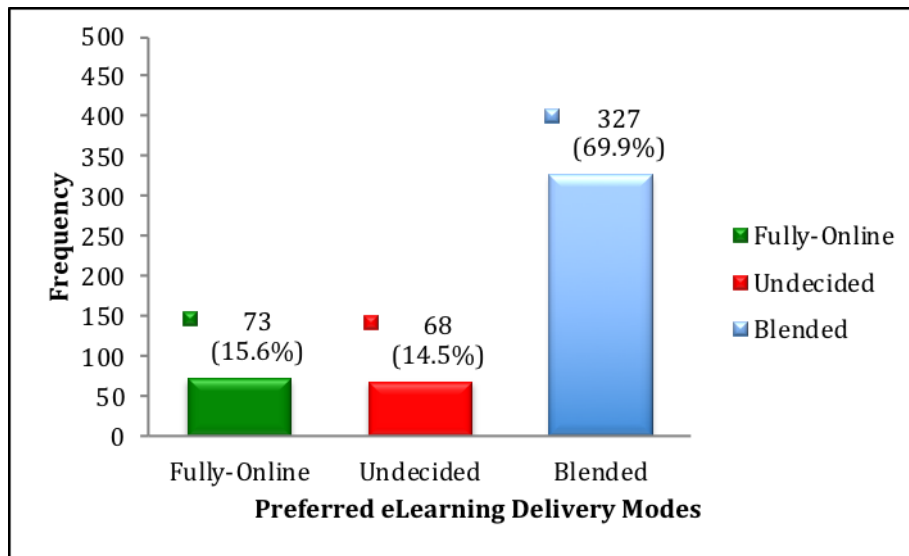


From Figure 2, it is clear that an absolute majority of students (N=457, 98%) indicated that they had access to electricity while an insignificant number (N=11, 2%) stated that they had no access to electricity.

Learner's Preference for eLearning Delivery Mode

Preference of eLearning delivery mode included fully online and blended modes. However, students were allowed to indicate 'undecided' if they did not prefer any of the two delivery modes. The descriptive statistics of learners' preferred eLearning delivery mode are as presented in Figure 3.

Figure 3: Preference for eLearning delivery modes in distance education



Results in Figure 3 clearly indicate that more than half of the students (69.9%) preferred the blended mode of eLearning delivery while less than one-quarter (N=73, 15.6%) preferred the fully-online mode of eLearning delivery. The rest of the students (N=68, 14.5%) were undecided of their preferred eLearning delivery mode. It could be deduced that students who were not sure preferred face-to-face kind of distance education where digital technologies are not utilized.

Influence of Learner Access to ICTs on Preferred eLearning delivery mode

To establish the extent to which learner access to ICTs influence preference for eLearning delivery mode, the Chi-square test of independence was used. The results are displayed in Table 2.

Table 2: Chi-Square Results of Influence of ICTs Access on Preferred eLearning Delivery Mode

ICTs access	Preferred eLearning delivery mode			Chi-square	df	Sig.	Cramer's V
	Blended	Undecided	Fully online				
Yes	66.6%(203)	13.4%(41)	20.0%(61)	12.967	2	0.002*	0.266
No	76.1%(124)	16.6%(27)	7.4%(12)				

The results (see Table 2) show a significant influence of ICTs access on preferred eLearning delivery mode, $X^2(2) = 12.97$, $p < .05$, Cramer's $V = 0.27$. The results suggest that students with access to ICTs significantly preferred fully online compared to students without access to ICTs. However, students without access to ICTs significantly preferred a blend of face-to-face and online compared to those with access to ICTs. It is therefore concluded that access to ICTs has a significant influence on learner preference for eLearning delivery mode.

Influence of Access to the Internet on eLearning delivery Mode Preference

Chi-square test of independence was applied to determine the influence of Internet access on learner preference for eLearning delivery mode. The results are presented in Table 3.

Table 3: Influence of Internet Access on Preferred eLearning Delivery Mode

Internet Access	Preferred eLearning delivery mode			Chi-square	df	Sig.	Cramer's V
	Blended	Undecided	Fully online				
Yes	70.6%(307)	14.0%(61)	15.6%(73)	1.679	2	0.632	0.060
No	60.6%(20)	21.2%(7)	18.2%(6)				

As shown in Table 3, there was no significant influence of Internet Access on eLearning delivery mode preference, $X^2(2) = 1.68$, $p > .05$, Cramer's $V = 0.060$. This suggests that access to the Internet does not significantly determine their preference for eLearning delivery mode. Both students with access ($n = 307$, 70.6%) and those without access ($n = 20$, 60.6%) to the Internet significantly preferred blended mode of delivery.

Influence of Access to Electricity on eLearning delivery Mode Preference

The last objective sought to determine the influence of access to electricity on the preferred eLearning delivery mode. Table 4 contains the results.

Table 4: Influence of Access to Electricity on eLearning delivery Mode Preference

Access to Electricity	Preferred eLearning delivery mode			Chi-square	df	Sig.	Cramer's V
	Blended	Undecided	Fully online				
Yes	69.1%(316)	14.5%(68)	15.6%(73)	4.857	2	0.044*	0.112
No	100% (11)	0% (0)	0% (0)				

A statistically significant influence of access to electricity on learner preference for eLearning delivery mode was found, $X^2(2) = 4.86$, $p < .05$, Cramer's $V = 0.112$. Table 4 shows that 15.6% ($n=73$) learners with access to electricity compared to none of those without electricity access preferred fully online. In addition, 69.1% ($n=316$) of students with electricity access compared to 100% ($n=11$) of learners without electricity access preferred blended mode of delivery. It is concluded that access to electricity significantly influences learner preference for eLearning delivery mode.

Discussion and Conclusions

Learner access to resources for eLearning is key to effective eLearning implementation and uptake. To be able to use eLearning tools to improve learning students need to have access to resources such as ICT devices, the Internet, time support, and electricity. These resources make the learning environment relaxed and enjoyable. The current study revealed that majority of the respondents had access to computers, tablets, smartphones and external storage devices. This suggests the more a learner have access to these resources the better they enjoy learning. This creates a window of hope for eLearning uptake in Ghana.

The purpose of this study was to investigate the influence of distance learner access to resources for eLearning on preference for eLearning delivery mode. The first objective was to determine learner preferences of eLearning delivery mode in distance education programmes. The results revealed that majority of the students had a preference for blended mode of delivery compared to fully online mode, though some were undecided. The finding was consistent with Tagoe's (2012) study conducted to determine how students perceived the introduction of eLearning into teaching and learning in Ghanaian universities using TAM as the theoretical model. The results of the study revealed that the majority of students preferred mixed or blended mode compared to fully online. The results could be attributed to the fact that a single delivery mode certainly limits the reach of a learning programme or critical knowledge transfer in some form or fashion (Singh, 2003).

The influence of learner access to ICTs on the preference for eLearning delivery mode in distance education was also supported in the current study. This suggests if students do not have access to certain pertinent eLearning resources, introducing fully online delivery would undoubtedly fail. Students' ability to access and interact with learning content is dependent on access ICTs. Rhema and Miliszewska (2014) urged that student's attitude towards eLearning is inextricably connected to demographic characteristics, access to technology, use of technology for learning, technology skills and satisfaction with technology in developing countries.

The need for Internet access in education today cannot be downplayed. Although the current study found no significant influence of Internet access on eLearning delivery mode preference, the result should not be ignored. This could be due to the fact that the influx of mobile technology has made Internet access so easy and handy to influence certain preferences. Contrary to this finding was a study (Henderson, 2005) that reported that Internet access significantly influences students' ease of eLearning use.

Access to electricity in developing countries is key to development in every sector. The current study's finding that electricity access significantly influences eLearning delivery mode preference should not be taken for granted in eLearning delivery. Lack of access to electricity has the potential of rendering technological tools useless (Leary & Berge, 2007). It is as a result of this that Awidi (2008) suggested that institutions should go into partnerships with private internet service providers and other organisation to supply power to students when the main power supply cuts off. It is concluded that learner access resources for eLearning such as computers, smartphones, the Internet, and electricity are the fundamental building block for successful eLearning implementation.

One major limitation of the study relates to the instrument used for data collection which was a questionnaire. Questionnaires have the limitation of not being able to tell how truthful respondents were with their responses. The study, therefore, recommends the use of other data collection tools such as interviews and focus group discussion to delve deeper into the issue.

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