Information And Communication Technology Use Among Teacher Education Students In Universities In Kenya

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Abstract: Information and Communication Technologies (ICTs) which involve the integration of telecommunications, computers as well as various software and audio-visual system are becoming the new educational tools especially in universities. The study sought to investigate the types of ITCs used frequently (on and off campus) among teacher education undergraduates in public and private universities in Kenya. Simple random sampling was used to select 223 fourth year Bachelor of education students. The data was collected using researcher administered questionnaires. Descriptive statistical techniques were used to analyse the data. The findings were presented in tables. The study found out that students frequently used a variety of ICTs such as the internet, computer laboratories and the mobile telephone on and off campus. The study also found out that both private and public universities ha invested substantially on ICT infrastructure for use by their students.

Index Terms: Comparative use, ICTs, Teacher Education, Utilization

1.0 INTRODUCTION

Information and communication Technologies (ICTs) are at heart of the educational process (UNESCO, 1999). These ICTs include a diverse set of resources (the internet, computers, various software, among others) that are critical for communication, creation, dissemination, storage and management of information (UNESCO, 2002a). Higher education institutions especially those in the west have adopted ICT as a means to impart upon students the knowledge and skills demanded by 21st century educational advancement (UNESCO 2002b). Driven by globalization and the need to train knowledge, skilled and competitive professionals, universities in developing countries face a huge challenge to increase access to and improve the quality of higher education against the stark reality of decreasing resources (UNESCO, 2013). Many researchers are directing attention to the use of ICTs in education (Ndirangu & Kabira, 2013; Oyerelan-Oyeyinka & Adeya, 2004; Butcher et al, 2003).

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2.0 METHODOLOGY

The study was a descriptive survey that adopted the *ex post facto* design to gather data. Simple random sampling was used to select 223 fourth year Bachelor of education students as shown in Table 1 below

Table 1

Distribution of Students Respondents by Type of University

Categories of respondents	Frequency	Percent
Private	106	48%
Public	117	52%
Total	**223**	**100%**

The students were selected from private and public universities that offered teacher education. The data was collected using researcher administered questionnaires. The data collected was analyzed using the Statistical Package for Social Sciences (SPSS) for windows version 17.0. Descriptive statistical techniques were used to analyze the quantitative data. These included frequencies and percentages.

3.0 FINDINGS

Many researchers are directing attention to the use of ICTs in education (Ndirangu (2003). This study investigated how frequently teacher education undergraduates in Kenya used ICTs and how.

3.1 Types of ICT used on Campus

The students were asked to indicate the types of ICTs they used frequently (on and off campus); The responses on the various types of ICTs used on-campus were as shown on Table 3:

Table 3
Types of ICT used on Campus

Type of ICT	Frequency	%
The Internet	201	90
Computer Labs	181	81
Mobile telephone	172	77
Television	136	61
Radio	127	57
Laptop Computer	90	40

Table 3 shows that although students used a variety of ICTs, the internet, computer laboratories and the mobile telephone were the most popular among students on campus. At the same time, a few students reported that they used the laptop computer on campus. The results on high internet and computer laboratory usage may partly be due to the proliferation of ICTs in the larger Kenyan society. Such developments have impacted positively on the universities. All Kenyan universities have increased their bandwidth acquisition as reported by the Kenya Education Network (Meoli & Waema, 2009). The use of computer laboratories or resource centres by 81% of the students was an indication that students were utilizing the ICT infrastructure provided by their universities. It is also notable that these institutional computers were also connected to the internet going by the high frequency of use of the internet on campus (90%). Table 3 also shows that the other ICTs that students used on campus were for example the television (61%) and the radio (57%). This may imply that many students obtained additional information from these 'traditional' types of ICTs for either study of non-study related needs. Students may use documentaries are aired on both pay and the free to access television channels. These facilities are provided by the universities in student's common rooms. Other students may have also acquired their own television sets which they used in their hostels (Saiross & Mutula, 2004) The mobile telephone was a popular gadget among the students on campus as reported by 77% of them. It is noted that the mobile telephone has a variety of features that were once paid for as separate devices – the camera, video recorder, GPS, text messaging and FM radio facilities. As a result, students can use their personal mobile telephones to make podcasts, take field notes, and organize their potential for data collection. It can enrich fieldwork by allowing students to capture images of objects of interest for later identification and discussion. Another important aspect of the mobile telephone is that it is fairly affordable. Therefore, many students have one, even those who come from lower income brackets (Manzo,2010). Unfortunately, despite the benefits to university learning and teaching associated with the mobile telephone, some students have misused the gadget to cheat in examinations, disrupt lecture activities or take unauthorized or inappropriate images of lecturers or students for uploading to the web (Andrew, 2009). Other users of the mobile telephone argue that it takes too long to download something while some have difficulty reading something on its screen because it is too small or that they experience difficulty entering a lot of text on the telephone (Aaron, 2011). The use of radio increasingly becoming common because many mobile telephones have an FM radio feature. This allows the students to flexibly and conveniently use their mobile telephones to follow radio programmes of their choice. In some cases there are call-in live shows both on television and radio, where they may contribute their views on various subjects. Table 3 also shows that only 40% of the students reported that they used laptop computers on campus. This may be largely due to the high cost of obtaining them. However, the Kenya ICT Board and the Ministry of Information and Communication (MoIC) had launched a laptop initiative to provide financial assistance towards purchasing laptops for registered university students in public and private universities and colleges. The laptops initiative was known as 'Wezesha' (a Kiswahili word that means 'to enable'). The first phase aimed at providing 15,667 laptops out of which, 5% (approximately 784 laptops) were allocated and reserved for students with special needs. This phase was concluded in March 2012 (www.wezesha.org). Though worthwhile, this initiative only covered approximately 12% of the student population given that the country had 122,874 university students of whom approximately 80 percent were in public universities (Kenya National Bureau of Statistics, 2009).

3.2 Comparison of ICT use on Campus per university type

The study was also interested in comparing how students in private and public universities used ICTs on campus. The results of this comparison were shown on Tale 4:

Table 4
Comparison of Students' Use of ICT on Campus in Private and Public Universities

Type of ICT	Private (%)	Public (%)
Mobile Telephone	92	60
The Internet	91	88
Computer Labs	85	80
Television	82	39
Laptop Computer	43	36
Radio	37	39

On the over all, the results show that private universities had a markedly higher use of identified ICTs on campus compared with public universities. On the one hand, in regard to the ICT types identified, both university types reported high use of the internet and computer labs but comparatively lower use of laptop computers. The results also show that private university students had a higher use of the mobile telephone on campus compared with the public university students. From the results on Table 4, both university types indicated a high use of internet and computer labs. This implies that both private and public universities had invested substantially on ICT infrastructure for use by their students. The use of the mobile telephone and television on campus was higher in private universities at 92% and 82%, compared to 60% and 39%in

public universities, respectively. This may point to the fact that many of the students from private universities hailed from the higher social and economic strata and that they had better access to mobile telephones and television on campus as compared to their colleagues from public universities.

3.3 Types of ICTs used off campus

The study also investigated the frequency of use of various ICTs among private and public university students off campus. The results were as shown on Table 5:

Table 5
Students' Use of ICT off Campus in both private and public universities

ICT Type	Frequency	%
Mobile Telephone	130	58
The Internet	189	85
Computer Labs	51	23
Television	127	57
Laptop Computer	60	27
Radio	149	69

The notable ICTs used off –campus were the internet (85%), the radio (69%), the mobile telephone (58%) and the television (57%), in that order. However, the use of laptop computers (27%) and computer labs (23%) were less popular off-campus. These findings on off-campus use of various ICTs show that the Kenyan society is becoming ICT saturated with extensive proliferation of diverse forms of ICT based technologies that could be used either alone or in combination. The low responses on usage of laptop and computer labs suggests that the students depended heavily or institutional computers for their ICT needs. The response on high internet use (85%) compared to other ICTs implied that a majority of students were able to access internet services off campus. A number of reasons may explain this pattern of internet use. To begin with, some internet service providers may be located off campus. Secondly, such internet services may be flexible available in cyber cafes that open for long hours, including weekends (Cilesiz, 2009). Yet again, the providers charge modestly (Adetoro, 2010). These privately owned cyber cafes are an alternative to university libraries (Mutula*,* 2003*;* Saiross *&* Mutula, 2004). The cyber cafes are 'classrooms' for learning both how to use computers and to access information from the internet. The cafes act as internet training schools, places for learning, and have a potential to extend this training to a broader area of knowledge with increased competence and contribution from the internet café staff (Furuholt *&* Kristiansen*,* 2004*).* These results on high internet and mobile telephone usage were consistent with the Quarterly Statistical reports by the Communication Commission of Kenya (CCK) who observed that mobile tariffs continue to decline as competition between the service providers intensifies in both voice and data markets (CCK, 2011). The growth in the number of internet/data subscriptions in the second quarter (October – December) of the year 2010-2011, according to CCK reached 4.7 Million up from 3.2 million, indicating an increase of 46.8 per cent. The use of radio by 69% of the students off-campus suggests that in addition to the FM radio on their mobile telephones, they also use radio sets to obtain information for their studies or for non study purposes. At the same time, the use of television by 57% of the students shows that a significant number of students obtain information through this type of medium. In other cases, the ICT types are combined, for example, when radio television talk shows invite listeners' views through telephone calls or Short Message Service (SMS). The results show that fewer students use mobile telephony off-campus than on-campus (58%, compared to 77%). This may imply that there is a reduced need to contact family members and friends when they are off-campus using the mobile telephones and that they may use other outlets to access the internet.

3.4 Comparison of ICT use off campus per university type

The study undertook to compare students' use ICTs off campus by university type. The results are shown on Table 6:

Table 6
Comparison of students' Use of ICT off Campus in Private and Public universities

Type of ICT	Private (%)	Public (%)
Radio	70	63
Television	65	60
Mobile Telephone	55	61
The Internet	45	38
Laptop Computer	35	21
Computer Labs	17	11

The results on Table 6 shows that private university students had a higher off campus usage of all the ICTs except the mobile telephone. The results also show that both categories of respondents reported lower results for internet, laptop computer and computer labs usage. The results further show that public university students reported higher mobile telephone usage off campus (61%) than their private counterparts (55%). The explanation for this may be that while some of then do not use mobile telephones on campus; more opportunities are available to use the telephones off campus. Such mobile telephones may be those belonging to parents and other family members or friends, among others. The results on higher internet use by private universities (45% against 38) point to the possibilities implied earlier that some of them may access the internet on the parents' telephones or probably others have internet connections at their homes. It may also be concluded from the results that students used radio and television for entertainment purposes while off campus, more than the other ICT types.

4.0 Summary

In summary, the students' responses on first objective of the study on functions of ICTs for teacher education revealed that they used various ICTs (the Internet, Computer resource rooms/laboratories, laptop computers, mobile telephones, television and radio both on and off-campus. These results on off campus use of ICTs suggest that although the students relied on institutional ICTs for internet and computer related needs, they still has access to some ICTs while off campus, albeit to a lower extent. This may also imply that universities need to explore the potential that exists in adjusting their training programmes so as to provide the possibilities of their students to accessing online learning resources off campus. Students can also receive other formats of learning materials such as take away CDs or DVDs with content which they can interact with while off campus, among other numerous possibilities such as utilizing SMS as a means of communicating important information (Like opening dates, upcoming events or other urgent alerts).

5.0 References

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