TUTORS’ PERSPECTIVES ON INTEGRATING INFORMATION AND COMMUNICATION TECHNOLOGY INTO TEACHING: EVIDENCE OF COLLEGES OF EDUCATION

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ABSTRACT

This paper investigated the perspectives of tutors in integrating information and communication technologies into their teaching. There is universal recognition of the need to use information and communication technologies in education as this is an era of globalization where the flow of information via satellite and the internet dominates information dissemination. This study is underpinned by the uses and gratifications theory, and a quantitative research design was used with a purposive sampling technique to select 120 tutors from Ghanaian colleges of education. The findings of the study revealed that most of the tutors have knowledge of information and communication technologies and they integrate information and communication technologies in their teaching and learning process. Furthermore, the tutors' level of knowledge of information and communication technology positively affects their information and communication technology integration in the teaching and learning process. We recommended that tutors should continue to use information and communication technologies to reshape and support their teaching.

Keywords: availability, knowledge, learning resources, tutors

INTRODUCTION

The introduction of information and communication technologies (ICTs) in teaching has transformed the way teachers teach (Bhattacharjee & Deb, 2016; Buabeng-Andoh, 2012). The integration of ICTs in teaching is a high priority in most developing countries’ educational reform agendas (Peeraer & Van Petegem, 2011; Richardson et al., 2015). ICT is increasingly becoming an important parameter in our educational system (Ahiatrogah & Barfi, 2016). According to Ghavifekr and Rosdy (2015), ICTs provide an avenue for educational institutions to harness and use technology to complement and support the teaching process, and the use of ICTs in teaching can predict students’ learning.

For teacher education institutions to reap the full benefits of technological devices, tutors must be able to effectively use these ICTs in their teaching and learning processes. Teacher education institutions and authorities must provide preservice teachers with ICTs to support their teaching (Asare & Nti, 2014; Mukuna, 2013; Semenov, 2005). The role of technology in teaching is rapidly becoming one of the most important and widely discussed issues in contemporary education policies (Aduwa-Ogiegbaen & Iyamu, 2005; Etesike, 2019). The effective use of ICTs in teaching motivates students to learn and thereby shapes workforce opportunities through teaching outcomes (; Chigona et al., 2014; Mukhari, 2016). There is no doubt that ICTs can
aid the instructional process and facilitate the lifelong learning of students. Many students report positive effects associated with technology-aided instruction using ICTs (Ahiatrogah et al., 2012; Delen & Bulut, 2011; Hanimoğlu, 2018; Keser et al., 2012).

Today’s educational institutions are restructuring their educational curricula to bridge the gap between teachers and students in their use of technology in the teaching and learning process. Most countries are investing heavily in this restructuring process; however, the adoption of ICT in the education sector is lagging in some African countries (Barakabitze et al., 2019; Buabeng-Andoh, 2012).

Ghana’s effort to adopt ICT in education began to receive support from the government recently (Ghana ICT for Accelerated Development Policy, 2003 cited in Agyei 2013). These efforts notwithstanding, Ghana’s recent participation in the latest international ICT development index revealed that the country ranked 116th out of 176 countries surveyed (ITU, 2017). This shows that Ghana is lagging behind in the integration of ICTs for teaching various subjects.

There is no doubt that ICTs have become a driving force of educational reforms in most developing countries. During the last decade, the government of Ghana has invested heavily in ICT use in teaching and learning in many institutions (Agyei, 2013). The use of ICTs in teaching has a major impact in the educational context. However, some students in the colleges of education complain that teaching is boring and it’s difficult to understand some concepts. It is, therefore, necessary for tutors at the colleges of education in Ghana to change their methodology and strive to make students properly understand concepts by using ICTs to enhance their learning. The solution to the problem lies in the use of ICT in the teaching and learning process. Unfortunately, much research has not been conducted to ascertain the college of education tutors’ perspective on using ICTs in teaching in Ghana. This study sought to investigate tutors’ perspectives on integrating ICTs in teaching at colleges of education in Ghana.

RESEARCH OBJECTIVES

This research is based on the following objectives:

1. To identify the available ICT resources for teaching in colleges of education in Ghana.
2. To identify tutors’ ICT knowledge level.
3. To identify how tutors integrate ICT in the teaching and learning process.
4. To identify the relationship between tutor’s ICT knowledge level and ICT integration in the teaching and learning process.

RESEARCH QUESTIONS

The research questions to be answered are:

1. What are the available ICT resources for teaching in the colleges of education in Ghana?
2. What are the tutors’ ICT knowledge levels in the teaching and learning process?
3. What is the level of tutors’ ICT integration in the teaching and learning process?
4. What is the relationship between tutor’s ICT knowledge level and ICT integration in the teaching and learning process?

THEORETICAL FRAMEWORK

This study is underpinned by the uses and gratifications theory. The uses and gratifications theory was selected because it focuses on why people actively seek out specific media to satisfy specific needs. According to Asiedu and Badu (2018) and Severin and Tankard (2000), one of the tenets of the uses and gratifications theory is that audiences are active and both studies seek to find out why audiences or users utilize mass media to satisfy their needs. The internet has enabled the audience to find resources and it provides more options from which users can select numerous websites and webpages to satisfy their specific needs.

Uwem et al. (2013) asserted that while using new media, people are actively combining several motives to fulfill their yearnings and aspirations, which are properly referred to as gratifications. The uses and gratifications approach is, therefore, a good way to find out to what purpose users employ available ICT resources in their teaching and learning process.

CONCEPTUAL FRAMEWORK

The availability of ICT can be conceptualized in many ways, and a number of different academic disciplines view access to teaching and learning in alternate ways. ICTs have a variety of impacts
on the daily life of users, including tutors, and the availability of ICT for teaching and learning can predict students learning. In the view of Muyiwa (2015), the utilization of ICT resources determined how resources are acquired, organized, and made available for use by tutors. Figure 1 presents a conceptual model for integrating ICT into teaching and learning.

**METHODOLOGY**

We adopted a quantitative research design for this study. The purpose of this study was to investigate tutors’ perspectives on integrating ICT into subject teaching in colleges of education in Ghana. We also investigated the relationship between the tutors’ ICT knowledge level and their integration of ICT in the teaching and learning process. Of the 41 colleges of education in Ghana (38 public and 3 private), 12 colleges were selected for the study, which was the population of interest. The tutors of Assin Foso College of Education, Peki College of Education, Tamale College of Education, SDA College of Education, Accra College of Education, Holy Child College of Education, St. Francis College of Education, St. Theresa’s College of Education, Dambai College of Education, Ola College of Education, Offinso College of Education, and St. Louis College of Education were selected for the study. We selected these Ghanaian colleges of education to enable us to get a fair and better representation of colleges of education for the study and to be able to generalize to all Ghanaian colleges of education. Ten tutors were selected from each college using a purposive sampling technique, and in all, 120 tutors were selected for the study.

We employed a questionnaire as the instrument to gather the data. The tutors voluntarily completed the questionnaires. All the selected tutors were teaching at the colleges of education in Ghana and had the same organizational and hierarchical structure, which makes no distinction between tutors’ duties and positions. The data were analyzed using Statistical Package for the Social Sciences (SPSS) version 21.0. Descriptive statistics, cross tab, mean, and independent t-test were used to analyze the data.

**FINDINGS**

**Demographic Responses of the Respondents**

This section highlights the demographic characteristics of age and gender of the respondents used in the study.

Table 1. Demographic Characteristics of the Respondents

<table>
<thead>
<tr>
<th>Age:</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 25 years</td>
<td>1</td>
<td>0.83</td>
</tr>
<tr>
<td>26–36 years</td>
<td>87</td>
<td>72.50</td>
</tr>
<tr>
<td>37–46 years</td>
<td>23</td>
<td>19.20</td>
</tr>
<tr>
<td>47–56 years</td>
<td>7</td>
<td>5.80</td>
</tr>
<tr>
<td>Above 57 years</td>
<td>2</td>
<td>1.67</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender:</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>80</td>
<td>66.7</td>
</tr>
<tr>
<td>Female</td>
<td>40</td>
<td>33.3</td>
</tr>
</tbody>
</table>

Table 1 indicates that 1 (0.83%) of them fell into the below 25 age bracket. Eighty-seven (72.5%) and 23 (19.2%) fell in the 26–36 and 37–46 age brackets. Seven (5.8%) and 2 (1.67%) of them respectively fell in the 47–56 and above 57 brackets. The results of this analysis show that the tutors used for the study were spread across all categories of age groups. Therefore, they provide all the ages needed for this study.

Out of the 120 tutors selected for the study, 80 (66.7%) were males and 40 (33.3%) were females (See Table 1). Thus, most of the tutors used in the study were males.

**Research Question 1:** What are the available ICT resources for teaching in the colleges of education in Ghana?

To answer this question, respondents were asked to indicate what ICT resources are available at their college of education. The details of their responses are represented in Table 2.
Table 2. Response of Teachers showing the Available ICT Resources

<table>
<thead>
<tr>
<th>ICT Resource</th>
<th>Available</th>
<th></th>
<th>Not Available</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent</td>
<td>Frequency</td>
<td>Percent</td>
</tr>
<tr>
<td>Computer lab</td>
<td>110</td>
<td>91.7</td>
<td>10</td>
<td>8.3</td>
</tr>
<tr>
<td>Interactive smartboard</td>
<td>40</td>
<td>33.3</td>
<td>80</td>
<td>66.7</td>
</tr>
<tr>
<td>Multimedia projector</td>
<td>100</td>
<td>83.3</td>
<td>20</td>
<td>16.7</td>
</tr>
<tr>
<td>Slide projector</td>
<td>50</td>
<td>41.7</td>
<td>70</td>
<td>58.3</td>
</tr>
<tr>
<td>Video discs</td>
<td>30</td>
<td>25.0</td>
<td>90</td>
<td>75.0</td>
</tr>
<tr>
<td>Printers</td>
<td>120</td>
<td>100.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Laptop</td>
<td>120</td>
<td>100.0</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>


The results in Table 2 reveals that four of the listed ICT resources (computer lab, multimedia projector, printers, and laptop) are above 50% and were readily available while the other three listed (interactive smartboard, slide projector, and video discs) are below 50% and therefore not readily available. This shows that the Ghanaian colleges of education have available ICT resources for teaching and learning. In a technological world that recognizes the role of ICT in education, academic institutions should create situations that enable their tutors to have access to ICT resources for teaching and learning. Anderson (2010) stated that the three stages of ICT in learning, namely: learning about ICT, learning with ICT, and learning through ICT. This broad exposure of ICT for teaching is important in a world controlled by ICT and is an indication that academic institutions are reflecting the realities in the world (Anderson, 2010).

Research Question 2: What are the tutors’ ICT knowledge levels in the teaching and learning process?

To answer research question 2, descriptive analysis was used to see the frequencies of tutors’ ICT knowledge. The details of their responses are represented in Table 3.

The results in Table 3 reveal that the majority strongly agree (65.3%) and agree (63.8%) that they search for teaching aids using the internet and can create teaching aids using the computer. The majority of the tutors agreed that they can prepare notes with the support of the internet (60.1%) and find questions for students using the internet (59.7%). Moreover, most of the tutors strongly agree that they can use ICT applications in their teaching (64.3%). This means that most of the tutors know how to use ICT in the teaching and learning process. The findings support the work of Bhattacharjee and Deb (2016), Ghavifekr et al. (2013), and Moganashwari and Parilah (2013), who concluded that most teachers are knowledgeable in the use of ICT for teaching and learning. However, the study contradicts the study of Mahmud and Ismail (2010), who reveals that a minority of teachers was knowledgeable in using ICT.

Research Question 3: What is the level of tutors’ ICT integration in the teaching and learning process?

This study sought to find out the pattern of ICT utilization by the participating tutors. We looked at the use of computers for academic work and the use of ICT applications for teaching. The frequency of ICT use for academic work and the details of their responses are represented in Table 4.

Table 3. Frequencies of Tutor’s level of ICT Knowledge

<table>
<thead>
<tr>
<th>Statements</th>
<th>Strongly Agree %</th>
<th>Agree %</th>
<th>Strongly Disagree %</th>
<th>Disagree %</th>
</tr>
</thead>
<tbody>
<tr>
<td>I search for teaching aids from the internet</td>
<td>65.3</td>
<td>31.9</td>
<td>1.5</td>
<td>1.3</td>
</tr>
<tr>
<td>I can create teaching aids with the computer</td>
<td>33.7</td>
<td>63.8</td>
<td>1.1</td>
<td>1.4</td>
</tr>
<tr>
<td>I prepare notes with the Internet</td>
<td>35.6</td>
<td>60.1</td>
<td>2.4</td>
<td>1.9</td>
</tr>
<tr>
<td>I find questions for my students from the Internet</td>
<td>39.0</td>
<td>59.7</td>
<td>1.0</td>
<td>3.0</td>
</tr>
<tr>
<td>I use ICT applications in my teaching</td>
<td>64.3</td>
<td>31.6</td>
<td>1.8</td>
<td>2.3</td>
</tr>
</tbody>
</table>

The majority (70.8%) of the tutors responded very often and often indicated that they use ICT for academic work. The majority of tutors integrate ICT in their academic work. Therefore, this affirms the study conducted by Van-Ess (2013), who concluded that most Ghanaian tutors in the colleges of education use ICT in their academic work. This also confirms the assertion of Asiedu and Badu (2018) and Severin and Tankard (2000) on uses and gratifications theory that users make use of certain media because they know how to use it. Table 5 summarizes the results on how often the respondents use ICT application in their academic work.

The results in Table 5 reveal that most of the tutors often use computers with an overall mean score of 3.10 (SD = .61). The tutors’ use of computers was evident within CAL (mean score of 3.38), CMI (mean score of 3.20), and CAI (mean score of 2.76). Most of the tutors used the computer for computer-aided learning (CAL), computer-managed instructions (CMI), and computer-assisted instructions (CAI). The findings of this study support the work of Bhalla (2013), who indicated that many tutors in the Ghanaian colleges of education varied their teaching methods by integrating ICT in their teaching and learning process.

Table 5. Percentage Distribution of Tutors Use of Computers and Distribution of Mean Score

<table>
<thead>
<tr>
<th>Computer Use Scale</th>
<th>Never</th>
<th>Seldom</th>
<th>Often</th>
<th>Very often</th>
<th>Mean Score</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAL</td>
<td>2.3%</td>
<td>8.2%</td>
<td>60.5%</td>
<td>29.0%</td>
<td>3.38</td>
<td>.73</td>
</tr>
<tr>
<td>CMI</td>
<td>.8%</td>
<td>7.9%</td>
<td>61.2%</td>
<td>30.1%</td>
<td>3.20</td>
<td>.85</td>
</tr>
<tr>
<td>CAI</td>
<td>4.5%</td>
<td>12.3%</td>
<td>54.2%</td>
<td>29.0%</td>
<td>2.76</td>
<td>1.00</td>
</tr>
<tr>
<td>Total Computer Use</td>
<td>2.4%</td>
<td>7.0%</td>
<td>57.6%</td>
<td>27.3%</td>
<td>3.10</td>
<td>.61</td>
</tr>
</tbody>
</table>


Research Question 4: What is the relationship between tutor’s ICT knowledge level and ICT integration in teaching and learning process?

In order to answer this, respondents were asked to express their opinion of the relationship between tutors’ ICT knowledge level and ICT integration in the teaching and learning process. The details are represented in Table 6.

Table 6. Correlations of Variables

<table>
<thead>
<tr>
<th>Integration</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of Pearson Correlation</td>
<td>.841**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>118</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed)

The result in Table 6 reveals that there is a significant relationship between tutors’ ICT knowledge level and ICT integration in the teaching and learning process. The significant values of .000 is less than α = 0.05. This implies that tutors’ level of ICT knowledge positively affects ICT integration in the teaching and learning process. This agrees with the findings of Besigomwe (2016), who concluded that the skills of lecturers on ICT integration determined their readiness to use technologies in their teaching and learning process.

CONCLUSION

The study investigated how tutors in the colleges of education in Ghana integrated ICT in teaching and learning. Ostensibly, many tutors in the colleges of education in Ghana have access to ICT resources and are knowledgeable in the use of ICT in the teaching and learning process. Thus, the research concludes that while ICT is integrated into teaching in the colleges of education in Ghana, their level of integration is high. It was also revealed that most of the tutors used the computer for CAL, CMI, and CAI. Furthermore, the tutors’ level of ICT knowledge positively affects their ICT integration in the teaching and learning process.

LIMITATIONS OF THE STUDY

Due to the small size of sample of the study, care was taken when generalizing the results. Again, the study was limited to the number of colleges of education selected for the study and their tutors.

RECOMMENDATIONS FOR POLICY AND PRACTICE

We therefore suggest that tutors should continue to use ICT in reshaping classroom teaching. The Curriculum Research Development

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Division (CRDD) of the Ghana Education Service, in collaboration with the related agencies in the Ministry of Education, should carry out research to review critically the curriculum and revise the existing course outlines to explicitly state what ICT resources must be used and how they should be used in the teaching and learning process.

**RECOMMENDATIONS FOR FUTURE RESEARCH**

It is obvious from the study that other vital areas should be researched. These include the role of digital natives versus digital migrants in the professional development of tutors and the technological influences on the management system in colleges of education. We recommend that further studies should be carried out in other countries with larger sample sizes. Heads of academic institutions and students should also be used as respondents to see if the results are parallel to this study.

**POTENTIALLY CONFLICTING INTERESTS**

The authors have no financial conflict of interests.
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