The Integration of Icts into the Learning Activities of the College of Medicine Undergraduate Students

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ABSTRACT. This study examined the use of Information and Communication Technologies (ICT) by students at the College of Medicine as a tool for supporting learning. Questionnaires containing both open and closed questions were administered to 65 undergraduate students representing 10% of the total population of students. The students were randomly selected within their departments as strata for the study. Data analysis was undertaken using Microsoft Excel for quantitative data and thematic analysis for qualitative data. The major findings of the study revealed that most students at the College of Medicine realise and appreciate the vital role which ICTs contribute to their academic work when integrated successfully. However, the integration of these technologies is negatively affected by a number of factors including inadequacy of ICT facilities, power/electricity interruption, slow Internet flow, viruses, and limited time for students to access ICT facilities. The findings also showed that among the ICTs that the College of Medicine provides computer terminals for use and Internet services are highly used by students. The least are e-journals and e-learning. In order for the College to enhance students’ competencies with ICTs, the researchers recommended that the College should consider purchasing more ICT resources, extending opening hours for the Internet/ICT labs, acquiring large bandwidth and widening the network coverage throughout the campus including the hostels. The study did not involve the other categories of people that use ICT based resources on the campus such as postgraduate students and members of staff who could have enriched the findings of the study. The study has brought to light the students’ concerns regarding the use ICTs at the College, it is hoped that if management of the College decides to implement the recommendations made by the researchers, the integration of ICTs in the students learning activities will be enhanced, thereby maximising usage of ICT based services at the College. The study has revealed unique issues regarding undergraduate students’ usage of ICTs at the College of Medicine. For instance, lack of ICT skills is a major problem in other institutions of higher learning in Malawi which is contrary to the findings of this study.

1. Objectives

The study was aimed at examining the use of Information and Communication Technologies by students at the College of Medicine as a tool for supporting learning. It identifies the types of ICT-based resources available, establishes how the integration ICTs enhances learning and reveals the problems that the students face with the use of ICTs.

2. Methodology

The study was a social survey targeting a total population of 652. It employed stratified sampling technique to group students into strata according to programmes. Simple random sampling was also used and enabled each individual an equal chance of being included in the sample. The study involved 65 participants representing 10% of the total population. This was supported by Seaberg (1998) who stated that in most cases a sample of 10% should be sufficient for controlling sampling errors. Questionnaires containing both open and closed questions were administered to the participants. Data was analysed using Microsoft excel. Data collection was done in August 2013.
3. Technology Description and Developments

The rapid proliferation of Information and Communication Technologies (ICTs) has significantly changed the educational landscape globally. Several studies argue that the use of ICTs in the classroom is essential for providing opportunities for students to learn to operate in the information age. In Malawi little literature on the use of ICTs by students at the Public Universities of Malawi and other colleges is available. However some related studies have been reviewed in this section which focused on the use of ICTs by the students in the University of Malawi Colleges in general without much details about those particular Colleges.

3.1 Types of ICT-based Resources Available for Use

There is a wide range of ICT-based resources used for learning including the Internet, electronic mail, CD-ROMS, telephone, online databases, fax machine and virtual learning environments. Gombachika and Kanjo (2006:16) list some ICT programmes in the University as tools that supplement some courses. For example, AutoCAD which is highly used in Architecture, Mechanical and Civil Engineering courses; Matlab and Electronic Workbench are used in Electrical Engineering, GIS and remote sensing is used in Land Surveying and Geography. They further observed that ICT is also used to support teaching of science and engineering. In this regard, practical sessions, demonstrations or field trips are recorded on videotapes and then played back to students. In addition, some of the lessons are on videotapes and DVDs. Using the audio/video rooms mainly in college libraries; students can watch the tapes at their convenient time. This is mainly used in nursing, medicine, engineering processes, chemical processes, animals and crop science courses. Roblyer and Edwards (2000:55) observe that in education and, indeed, in most areas of our information society, the three most widely used software support tools are Word Processing, Spreadsheet, and database programs. Khan (2011:34) outlined that students can access and disseminate electronic information like e-books, e-journals and can improve their learning by using different modern ICTs in form of wireless networks, internet, search engines, databases, websites and web 2.0 technologies. Interestingly the use of online social networking sites such as Facebook (fb) in medical education offers novel opportunities to support collaborative learning.

3.2 The Integration of ICTs to Enhance Learning

It has widely been recognised that in tertiary education ICTs hold the promise of transforming learning in new and powerful ways. This is the case as it allows for a wide range of people to access the content needed to improve their knowledge and professional skills without having to travel distances to a school. According to David (2005:5) ICT is perceived as a catalyst for change; change in teaching styles, learning approaches and in access to information. For instance the Internet and World Wide Web have transformed education and school systems and brought about dramatic changes to various aspects of education including distance and online learning, online interactions between teachers and students, virtual classrooms and other components of teaching, learning and training. According to Ololuke, Udogu and Ossain (2007:12), the introduction of ICT usage, integration and diffusion has initiated a new age in education methodologies, thus it has radically changed traditional methods of information delivery and usage patterns in the domain as well as offering contemporary learning experience for both instructors and students. In complementary, Nwosu and Ogbomo (2013:4) propose that the evolution of ICT into university clearly changes the way education is conducted. Not only is it possible to work with distance learning and achieve a closer collaboration between different universities, but also paving the way for a new pedagogical approach where there is unparalleled ability to spread knowledge and disseminate information among students during learning. The impact of ICT has not only changed the education system overall but also affect student academic performance and ways of conducting day to day learning. Nathan in (Bingimlas, 2013:6) emphasises that these tools, if used wisely and creatively, have the potential not only to support classroom activities but also transform the very nature of the way students learn and work. In addition Grabe and Grabe (2007:11) argue that
technologies can play a role in students’ skills, motivation, and knowledge. They claim that ICT can be used to present information to students and help them complete learning tasks.

3.3 Problems Students Face when Using ICTs

Studying the obstacles to the use of ICTs in education may assist educators to overcome barriers and become successful technology adaptors in the future. In view of this Bingimlas (2009:7) argues that identifying the possible obstacles to the integration of these technologies in the schools would be an important step in improving the quality of teaching and learning. Despite the positive impact of ICTs to education, students continue to face some challenges in the course of using these technologies. Becta in (Bingimlas, 2009:8) argues that inaccessibility of ICT resources is not always merely due to the non-availability of the hardware and software or ICT materials within the school but may be the result of one of a number of factors such as poor organization of resources, poor quality of hardware, inappropriate software, or lack of personal access. The use of computers and the Internet is still in its infancy in some developing countries, if these are used at all, due to limited infrastructure and associated high access cost (Potashnik and Capper in Nwosu and Ogbomo, 2013:2). Evidently, large number of students in higher learning institutions struggle to access these ICT facilities that are few to cater for all. According to Pergrum (2001) obstacles for ICT implementation include insufficient number of computers, teacher’ lack of ICT skills or knowledge, difficult to integrate ICT to instruction, scheduling computer time, insufficient peripherals, not enough copies of software, not enough simultaneous access, and not enough supervision staff. Tinio (2002:4) notes that the reality of the Digital Divide means that the introduction and integration of ICT will be the most challenging undertaking. The research on the use of electronic information services by students at Glasgow University done by Crawford (2003:35) found out the problems that students face as follows: insufficient numbers of Personal Computers for students, problems with password notification and insufficient technical support. Similarly Luambano and Nawe (2004:16) in their research on the investigation on the Internet use by students at the University of Dares Salaam reveal that majority of the students were not using Internet due to the inadequacy of computers with Internet facilities, lack of skills in Internet use and slow speed of computers. Kwacha (2007:14) notes that the most common problems associated with the effective implementation of ICTs are lack of ICT personnel, cost of equipment, management attitude, inconsistent electric power supply, and exclusion of ICT programmes in teacher’ training. Gombachika and Kanjo (2006:13) observe that most colleges under the University of Malawi have very limited bandwidth affecting Internet connectivity. In some cases, the limitation of bandwidth is due to the fact that the channel capacities available are not enough, where as in some cases it is due to bottlenecks caused by viruses and spam, there is limited number of workstations and peripherals, powerful servers to support the demands of ICT within colleges and limited ICT awareness and skills. Studying the obstacles to the use of ICTs in the learning environment is crucial because the knowledge gained could provide guidance for the ways to enhance technology integration and encourage greater use by students. In conclusion many institutions of higher learning in sub-Saharan Africa have attempted to exploit opportunities offered by ICT in teaching and learning, however, the reality in Malawi is different. For example, the policies in education have inadequately acknowledged the role of ICT although education has been recognised in the Malawi National ICT policy (Gombachika and Kanjo, 2006:13). This means that although policy makers in ICT have recognised the role education plays in ICT, policy makers in education have not yet fully recognised the role ICT plays in education. In addition, despite the National ICT Policy and much as the role of ICTs in education is appreciated, not a lot of research has been done on how students in universities acknowledge and integrate these technologies as a tool to support their studies.

4. Results

The study targeted 65 students and 65 questionnaires were distributed to the respondents. Out of 65 questionnaires, 60 were returned representing a response rate of 92%.
4.1 Types of ICTs which CoM Provides

Respondents were asked to indicate the ICTs that are available for use in the CoM. The question demanded multiple answers. Results showed that the most ICT-based resources and services that CoM provides for use by students are Internet 22 (37%), followed by Computers for use 20 (33%), e-journals 10 (17%), e-learning 7 (12%), and Multimedia Programmes 1 (2%).

4.2 The Most Useful ICT Services

Respondents were probed further as to what type of ICT services they found most useful in their studies/learning. In response, out of 60 respondents 26 (43%) found Internet as the most useful ICT-based service in their studies, followed by the provision of computers for use 22 (37%), e-journals 10 (17%), and e-learn 2 (3%). The researchers were also interested to know whether respondents had their own laptops. The results showed that out of 60, 25 (42%) had their own laptops.

4.3 Students’ Access to College Computers/ICTs

It was also necessary for the researchers to find out how easy it was for the students to access the ICT facilities at the College. This proved relevant as it was revealed that 58% of the students did not own laptops. Results indicated that most of the respondents 26 (43%) found it difficult to access College ICT based resources while 19 (32%) respondents found it easy to access; 10 (17%) respondents found it very easy to access, while 5 (8%) indicated that they found it very difficult to access the ICT based resources.

4.4 Integration of ICTs to Enhance Learning

This section was designed to find out whether respondents realised that the integrating ICTs in day to day learning in their studies was important. The results indicated that all respondents 60 (100%) were aware that that the integration of ICTs enhances learning.

4.5 Importance of Integrating ICTs when learning

In addition respondents were asked to give reason(s) why the use of ICTs in their studies was very important. The findings showed that out of 60, 36 (60%) respondents gave the following reasons; ICTs help students to access academic information very easily and at any time (for 24 hours). Easy to download most up to date information on new research and e-books. Students get vast amounts of information without taking much time. The results also showed that 24 (40%) of the respondents identified that ICTs facilitates the following activities; the collection and submission of assignments, easy communication with lecturers and online discussion with friends for instance through teleconferencing.

4.6 General Use of ICTs by Students

Although respondents showed their appreciation on the positive contribution of ICTs to their academic studies, it is obvious that some students may take time manipulating these technologies for other things apart from academic usage. Therefore the researchers wanted to know how often respondents used ICTs for either academic or entertainment or both. The results showed that out of 60 respondents the majority of respondents 29 (48%) frequently used ICTs for academic purposes while 19 (32%) respondents used ICTs for entertainment. 12 (20%) respondents indicated that they used ICTs for both academic and entertainment.

4.7 Reasons for Using the Internet

Internet was found to be the most valuable ICT based service that respondents used. Therefore the researchers wanted to explore the reasons for students’ usage of the Internet. The responses indicated that highest number of the respondents 20 (33%) used Internet for searching academic information, followed by 15 (25%) respondents who used Internet to communicate with the lecturers. 10 (17%) respondents used Internet for collection and submission of assignments while 9
(15%) used Internet as a social medium (facebook) to communicate and chat with friends and 6 (10%) respondents used Internet for downloading games, movies and audios.

4.8 Students’ Levels in ICT Skills

Students have different levels of ICT skills. Therefore the researchers wanted the respondents to indicate their level of skills for manipulating ICTs. Out of 60 respondents, 26 (43%) had very good ICT skills while 20 (33%) respondents had excellent and 14 (23%) showed to have good ICT skills. Respondents were further asked to mention how and where they acquired those ICT skills. Out of 60 respondents, 28 (47%) respondents acquired ICT skills and knowledge at CoM during their first year foundation stage through an ICT course. 13 (22%) respondents acquired their skills from Secondary School, while 11 (18%) respondents gained their skills from both Secondary School and at the CoM and 8 (15%) respondents were exposed to ICTs from homes and friends.

4.9 Challenges Students Face when Using ICT in their Studies/Learning

Respondent were asked to indicate any of the challenges that they might have been facing when using ICTs in their studies. The question demanded multiple answers. Out of 60 respondents 35 (58%) indicated that inadequate ICT facilities was the main challenge which negatively affected the integration ICTs in students learning endeavours. Secondly 9 (15%) respondents indicated power interruption as a challenge. 8 (13%) respondents feared the threats caused by computer virus attacks which corrupted their electronic information files. 6 (10%) respondents, slowness of the Internet flow and only 2 (3%) respondents indicated that they lacked skills on how to use ICTs. In addition respondents were given a chance to specify any other challenges that they were facing. Out of 60 respondents only 47 (78%) responded to the question. The results were as follows: Out of 47 (78%), 19 (32%) had limited time to access ICT facilities as most of the class sessions were in progress from 8 am until 5 pm concurrently with operations of ICT labs which invariably close at 5pm leaving little opportunity for the students to use the facilities. 16 (27%) respondents indicated that they could not access Internet while at their hostels due to limited network coverage and that hindered 24 hours access. 11 (18%) respondents indicated that due to restriction/filtering and blocking of some websites respondents were unable to access relevant academic materials.

5. Business Benefits

The aim of the study was to explore the use of ICTs by students at the College of Medicine as a tool for supporting learning. In order to achieve this aim the research was based on the following objectives: to identify types of ICT-based resources available for use, to find out how the integration of ICTs enhances learning, to identify some of the problems students face with the use of ICTs.

5.1 ICT-based Resources Available for Use at the College

Based on the findings, the study revealed that the ICT-based resources and services that the College of Medicine provides to students are the Internet, and provision of computer terminals for use, e-journals, e-learning and other multimedia programs. The research has also revealed that Internet services and provision of computer terminals for use are the most useful type of ICTs which students value in their studies/learning. Similarly McCarthy (2000:8) found out that the Internet and computers are probably the most valuable resources that bring to clinical practice, potential tools to fulfil goals of lifelong learning. This agrees with Chaputula (2012) who identified that 75% of the respondents rated Internet Browsing as the most useful ICT based service. Apart from these technologies that CoM provides, the study has unveiled that 42% of the respondents own personal laptops. It was unfortunate to establish that 26% of the respondents found it difficult to access the College ICT based resources bearing in mind that 58% of the respondents did not own laptops. This could be attributed to inadequacy ICT facilities and the fact that Computer labs get closed at 5pm leaving little time for the students to access the facilities as they are busy, attending classes during the day.
5.2 Integration of ICTs Enhance Learning

The study revealed that students were aware and recognised that ICTs enhance learning and view that ICTs play a vital role in supporting learning in many ways such as enabling students to access academic and up to date information easier at any time (for 24 hours). Furthermore the study shows that ICTs help students to communicate with lecturers when collecting and submitting assignments via email. In addition, ICTs support easy communication and collaboration among students, for instance online discussion via teleconferencing. Despite students’ appreciation to the positive contributions brought by ICTs to their studies, the study revealed that some students took much time manipulating those technologies for other activities other than academics. For instance students use the Internet for downloading games, movies and audio music and communicating with friends through facebook. This problem seems to exist in many universities. A survey conducted by Rae (2004) at UK Open University also revealed that over half of the students used the Internet more for leisure especially email for communicating with friends which is contrary to this study where 33% of the students used the Internet for academic purposes. This study also concurs with observations by Gombachika and Kanjo (2006:15) that lecturers and students use ICT in all colleges under the University of Malawi to search for teaching and learning materials, and using Internet to access library information, online databases and journals such as HINARI, PERI, JSTOR at all college libraries with varying degree of competence. On skills and expertise related to ICT use, the study revealed that some students have basic skills, while most of the students said to be skilled enough in manipulating the technologies. These skills have been enhanced by the introduction of the Malawi National ICT Policy which aims at promoting basic training in ICT skills and promote ICT awareness and computer literacy. This encouraged the CoM to incorporate the ICT course into its curriculum for the first year students to equip them with basic skills. From this end the research revealed that majority of students acquired ICT skills after completion of an ICT course at the institution while others were trained from Secondary Schools, their homes and friends.

5.3 Problems Faced by the Students with the Use of ICTs

The study established that the main problem that the students face regarding ICT at this institution is inadequate ICT facilities. This problem has been expounded by the fact that 58% of the students did not own laptops hence relying on the ICT facilities of the College. In addition the study revealed that students had limited time to access the College ICT facilities. This was due to the fact that most class sessions were run concurrently with the operations of ICT labs which got closed at 5pm resulting in inadequate time for access to ICT facilities. This indicates that those who do not have laptops do not have means to use ICT facilities after 5pm. Power/electricity interruption was another major challenge that was mentioned. Despite having electricity generators in the College, they did not cover other areas like the library where the students accessed ICT facilities. This is similar to the findings of Chapatula (2012) at Mzuzu University where he found out that persistent power outages negatively affected access to ICTs. Eze et al. (2013) also found out that electricity was one of the factors that determined adoption of ICT in Nigerian Public Universities. In this case the integration of ICT at the College of Medicine is negatively being affected by persistent power outages. Slow Internet and viruses were also unveiled as challenges at the institution. This is in line with Gombachika and Kanjo (2006:18) who argued that most colleges have very limited bandwidth for Internet connectivity which in some cases is due to bottlenecks caused by viruses and spam. They also add that there is limited number of workstations and peripherals and powerful servers to support the demands of ICT within the college. Apart from these, students were challenged with the Internet coverage. Internet coverage was not extended to the hostels and this hindered 24 hours Internet access by the students. The research further revealed that the ICT administration restricted, filtered or blocked some websites. Some of these websites contained information necessary for the students’ learning. The results of this study differ somehow with the findings of Chapatula (2012) at Mzuzu University, who found out that the major challenges were poor network infrastructure and lack of relevant ICT skills. While the
findings of this study agrees with Chaputula on the part of inadequate network infrastructure, only 3% of the respondents indicated lack of skills as a challenge at the College.

6. Conclusions

The findings of the study have shown that among the ICTs that CoM provides, computers and Internet services are highly used by students. The least used are e-journal and e-learning. According to the findings students at the College of Medicine realised and appreciated the vital role which ICT contributes to their academic work when integrated successfully. The study also unveiled that some students took much time using the Internet for downloading games, movies and audio and communicating with friends through Facebook. However, the integration of these technologies was not being put into full utilization. The reasons given pertaining to the little usage were: inadequacy of ICT facilities, power/electricity interruption, slow Internet and viruses, and limited time for students to access ICT facilities. Finally the researchers recommend that the college needed to consider purchasing more ICT based resources in order to accommodate more students and ease congestion on the few ICT resources available. The Internet/ICT labs opening hours should be extended in order to give students more time to access the ICT services and facilities. The College should consider increasing the bandwidth, upgrade internet coverage for the whole campus including students’ hostels. In order to ensure back-up power supply in times of power cuts and load shedding, CoM had to procure a number of generators and Uninterruptible Power Supply (UPS) systems. The College needed to intensify digital literacy, which could enhance students’ ICT abilities and skills. There was need to acquire new antivirus software in order to overcome virus threats and improve security on all servers and workstations and updating the ICTs available.

References


