The Role of Multimedia Technologies in ODL in Zimbabwe: A Case of Zimbabwe Open University

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Abstract: *The purpose of the study was to find out the role of multimedia in Open and Distance Learning (ODL) in Zimbabwe and Zimbabwe Open University was the site of the study. The study was a descriptive survey that employed questionnaires to solicit data from members of staff selected randomly from three regional centres. Out of a hundred and twenty staff members fifty were selected into the sample. In each regional centre, participants from all sections of the region, the registry, accounts, academic staff, modules office and assignments office were conveniently selected. Major findings indicated that ZOU is making concerted efforts in equipping and educating its staff on ICT. ZOU even went further by partnering with ICT service providers in ensuring that its staff gets ICT gadgets like computers, laptops or IPods. However, internet connectivity was found to be a major drawback, as some regional and district centres are not connected. The paper recommended that ZOU management should increase the number of ICT technical personnel, and increasing access to the internet by installing of more internet service points in the regions.*

Keywords: *multimedia technologies*

1. BACKGROUND OF THE STUDY

Zimbabwe Open University is an institution which was established to cater for people who could not be accommodated in conventional universities. ZOU was established on 1st March 1999 through an Act of parliament (Chapter 25:20). Currently, (in 2014), ZOU has four faculties: the Faculty of Arts and Education, the Faculty of Science and Technology, the Faculty of Commerce and Law and the Faculty of Applied Social Sciences. These faculties are offering more than 60 degree programmes and over 3 diploma courses. Starting with an initial enrolment of 624 students registered for the Bachelor of Education degree programme ZOU had a student enrolment of 25000 between 1999 and 2001. In 2004, ZOU became the largest university in the country. In 2009, ZOU in keeping with World trends introduced ICT laboratories throughout its regions in a bid to provide multimedia technologies to enhance teaching and learning. The introduction of the ICT laboratories was followed up with the recruitment of ICT technicians who were responsible for running the ICT laboratories and to assist both staff and students with ICT skills. Some of the specific strategic objectives of the ICT department are as follows:

- Equipping staff and students with ICT skills
- Upgrading staff e-mail server to the latest version of open Exchange
- Setup student mail server
- Complete outstanding WANS
- Complete outstanding Regional LANs
- upgrade National Centre LANs
- Setup outdoor and indoor wireless access for students and staff
- Setup a secondary server room in Bulawayo with a failover Internet link
- Setup Data Centre and implement backup system and archiving
- Expand Mash Central ICT lab and extend LAN.

2. PURPOSE OF THE STUDY

The purpose of this study was to find out the role played by multimedia at the Zimbabwe Open University in the teaching and learning processes.

3. RESEARCH QUESTIONS

- What are the efforts being undertaken by ZOU in equipping its regional centres with ICT?
- What is the contribution of ICT in improving access to education at ZOU?
- What are the challenges of introducing ICT at ZOU regional centres?

4. CONCEPTUAL FRAMEWORK

4.1. Multimedia Technologies

According to UNESCO (2002) multimedia technologies encompass text, audio, video, and computer-based materials, and usually some face-to-face learner support delivered to both individuals and groups. In this approach, which is used by the open universities, instruction is no longer an individual's work, but the work of teams of specialists Programmes are prepared for distribution over large numbers of learners, usually located across a whole country.

4.2. Open and Distance Learning

UNESCO (2002) defined open and distance learning (ODL) as any educational process in which all or most of the teaching is conducted by someone removed in space and/or time from the learner, with the effect that all or most of the communication between teachers and learners is through an artificial medium, either electronic or print. In ODL, the normal or principal means of communication is through ICT.

5. LITERATURE REVIEW

5.1. What are Multimedia Technologies?

Sife, Lwoga and Sanga (2007) submitted that functionally, e-learning includes a wide variety of learning strategies and ICT applications for exchanging information and gaining knowledge. Such ICT applications include television and radio; Compact Discs (CDs) and Digital Versatile Discs (DVDs); video conferencing; mobile technologies; web-based technologies; and electronic learning platforms. Television (TV) refers to a receiver that displays visual images of stationary or moving objects both live or pre-recorded and mostly accompanied by sound which is electronically captured, processed and re-displayed. Likewise, this applies to the term radio – both live generated sound as well as pre-recorded sound. Both TV and radio can improve teaching and learning process in different ways such as by showing processes and activities that may not otherwise be available to the learner. However, digitalization has taken over analog audio and video systems. The same authors argued that Compact Discs (CDs) and Digital Versatile Discs (DVDs) are based upon laser technologies for writing and reading data. They provide a way in which a large amount of multimedia training material can be stored and made available to end-users. Sife, Lwoga and Sanga (2007) are of the opinion that video conferencing is a system where two or more participants, based in different physical locations, can see and hear each other in real time (i.e. live) using special equipment. It is a method of performing interactive video communications over a regular high-speed Internet connection. A videoconference can be either two-way (point-to-point) or multipoint, linking three or more sites with sound and video. It can also include data sharing such as an electronic Whiteboard where participants can draw on, or text based real time 'chat'. According to the Department for Education and Skill, (2004), interactive whiteboard is simply a surface onto which a computer screen can be displayed, via a projector

6. FUNCTIONS OF ICT IN ODL

The UNESCO (2002) report identifies four different functions of information and communication technologies (ICT) in ODL:

- As an aid to distribution of materials;
- As a means of affording two-way electronic communication;

- Through networked computers which allow access to the Internet and multi way communication.

- As a means of diversifying into resource-based, self-accessed teacher education.

Stevens (2007) argued that the structures, organisation and process of teaching and learning have been revolutionised by the Internet, personal computers, information and communication technology (ICT), e-learning, virtual learning networks and the media. These changes have led to a conceptual shift from the traditional perspective of schools as closed, autonomous organisations that served specific communities to open, collaborative sites within teaching and learning networks that cross political and geographical boundaries as well as time zones.

Open source sites, which are free, are platforms that have allowed people with similar interests to interact and connect without requiring technical expertise. These sites have the potential for collaborative knowledge-building and have changed ODL (Starkey and Stevens, 2006). The pedagogy underpinning this type of learning requires the teacher to be a facilitator of learning with a view of the curriculum as something that is flexible. The collaboration involved in this type of learning activity includes connections between a group of students, their teacher, experts and interested parties beyond their classroom and even beyond their own country.

Rao ,(2009) pointed out that in distance learning system, learners are remote to the institution and are geographically dispersed and it is difficult for a learner to visit the institution every day to get a service/support as available in a conventional system and at the same time, it is even difficult to the institution itself to provide various services to the learners at different phases of a student learning life cycle. Information and Communication Technology (ICT) can play a pivotal role in mitigating these problems.ICT is directly used in the dispensing of various services to the student such as in admitting the students, registration procedures, tutorials , fees structure and the general communication with the students . Due to the absence of face to face interaction which is essential for social intercourse in ODL, web-based student learning and support system continue to play a bigger role in the administration of ODL. Sife, Lwoga and Sanga (2007) pointed out that socio-economic forces that have driven the higher learning institutions to adopt and incorporate ICTs in teaching and learning include greater information access; greater communication; synchronous and asynchronous learning; increased cooperation and collaboration, cost-effectiveness and pedagogical improvement. However, ICTs have not permeated to a great extent in many higher learning institutions in most developing countries due to many socio-economic and technological circumstances.

Jakobsdottir, Mckeown and Hoven (2007) pointed out that the proliferation of the use of various hand-held wireless mobile devices also supports networking through "on-the-fly" updates and the potential for real-time (or just-in-time) problem-solving and reciprocal peer-to-peer help. Ally (2009), argued that this has given rise to the term "m-learning" (or mobile learning) which encompasses mobile access to content-rich websites and social networking professional communities, as well as the contribution of content co -created by teachers in their own professional contexts. These trends further blur the boundaries between structured and unstructured learning and between consumers and producers of information. Thus the term "blended learning," which previously referred to a combination of face-to-face and online environments, has now been extended to include such applications as Twitter (e.g., Galagan 2009), the use of Clickers in face-to face classes, and access by remote or itinerant students to formal content based on learning management systems and to discussion forums through mobile devices. The importance of social presence in online environments – that is, the degree of awareness of the other person in a communication interaction – is also now being investigated (Kehrwald, 2008), as is the impact of collaborative, networked knowledge construction on how learning can be enhanced and elaborated through the uses of various social networking applications (Siemens, 2005). Anderson (2007), for example, lists five important uses for social networking application in education which are:

- Acquaintance and connection (bypassing constraints of course timing,)

- Institutional firewalls and, in some cases, privacy laws of particular nations); reflection (personal and group, allowing for "social validation of knowledge,"

- Mutual support, and self- and peer-regulation of learning

- Discussion in public space (opening discussion, critique and accessing of knowledge)

- Validation to the world beyond any specific classroom or course

7. CHALLENGES OF USING ICT IN DEVELOPING COUNTRIES

Nevertheless, the use of ICT also presents a number of problems that have to be addressed if ICT is to be successfully applied to training of various professionals. These problems, which are often significant for developing countries, include attaining appropriate technical infrastructure and funding to support ICT. Wright et al. (2009) argue that there must be a sound rationale for employing any form of ICT. They raise a range of issues that need to be addressed, such as the lack of infrastructure and Internet bandwidth and the challenge of countering the cultural impact of using courseware from Western countries, managing limited educational resources and implementing mobile learning .Hoppe et al. (2003) argue that m-learning (e-learning supported by mobile devices and wireless transmission) represents a paradigm shift in the use of ICT. The authors suggest that hand-held mobile devices are emerging as a promising technological tool for learning in place of the fixed computer. Challenges in adopting and using m-learning remain, however, and what is possible in developed countries is very different compared with developing countries. Some developing countries have areas that lack access to electricity, and this to date has prevented the use of mobile technology. However, a solar-powered phone went into production in April 2009 (Anderson 2009), which raises the potential of professional development of many professionals through mobile technology worldwide. Research by Leach et al. (2005) in Egypt and South Africa, Seppala and Alamaki (2003) in Finland, and Pouezevara and Khan (2007) in Bangladesh illustrates the benefits and difficulties of using mobile technologies in developed and developing countries. Though all reported some successes, particularly in relation to the sharing of visual images of teaching, key disadvantages also emerged. These included lack of proficiency in the use of the English language for software use (aparticular problem for the Egyptian teachers who worked in Arabic), and limited technical and infrastructure support . The establishment of embedded ICTs in ODL programmes is emerging as a key to achieve wider education access, Mashile (2008) argues that the lack of programmes using advanced technologies in South Africa is further entrenching the digital divide and "robs South Africans of participating in the knowledge society" Differences are seen between the low level models that rely on transmission of knowledge through packaged material and high level models that use a range of strategies, such as distributed problem-based learning (Barrows 2002) and communities of learning and community-centred projects (Van Niekerk 2004). Thus, this so-called digital divide must be acknowledged by ODL programme designers if they are to create viable pedagogies that take into account ICTs.

Nzepa (2011), pointed out that in Africa, there is the lack of adequate capacity to implement and enforce public interest policies, limited participation in global ICT negotiation and inadequate cooperation and coordination at regional levels. Nenge and Mapolisa (2012) argued that in Southern Africa, some of the challenges are emanating from erratic electricity supplies which are key in making direct impact on ICT. Zimbabwe, just like most African countries, basically faces a number of challenges in order to effectively roll out computing technologies to the general population, let alone institutions of higher learning like ZOU. A research by Ndlovu (2009) revealed that some of the challenges which ODL faces in trying to implement ICT programmes include:

- Cost of computers and equipment

- Inadequate access to technologies (data and voice)

- Poor national and international bandwidth

- Regulation and licensing problems

- Brain drain and lack of skilled manpower and ICT certifications

- Poorly designed and optimized websites

Sife, Lwoga and Sanga (2007) are of the opinion that there are a number of challenges that face universities in developing countries as they seek to implement the e-learning systems. Robinson (2008) asserts that African universities which should be in the forefront of ensuring Africa's participation in the ICT revolution, they are themselves unable and ill-prepared to play such a leadership role. This is because of the information infrastructure of African universities which is poorly developed and inequitably distributed.

8. METHODOLOGY

This study employed a mixed methods approach. Data were presented and analysed both qualitatively and quantitatively. This gave the researchers an opportunity to explore the ICT implementation challenges affecting ZOU from three regional centres namely Mashonaland East, Manicaland and Mashonaland West. Data were gathered using questionnaires. Out of a hundred and twenty staff members fifty were selected into the sample. In each regional centre, respondents from all sections of the region, the registry, accounts, academic staff, modules office and assignments office were conveniently selected.

9. FINDINGS AND DISCUSSIONS

Table 1. *Efforts being undertaken by ZOU in equipping its regional centres*

Efforts	Number	Percentage
Provision of computers at regional laboratories	50	100
Equipping staff and students with ICT skills	45	90
Setting up data centre and implementing backup system and archiving	30	60
Setting up student mail server	40	80
Upgrading staff mail server to the latest version of open exchange	25	50

All the respondents pointed out that ZOU is providing computers in all its regions and this is the most significant step ZOU has taken in its bid to ensure that the university forges ahead in this era of knowledge society. This observation by the respondents is in tune with ZOU's aim of providing multimedia technologies to enhance teaching and learning. Ninety percent (90%) pointed out that ZOU has equipped its staff and students with ICT skills, a programme which is championed by the ICT technicians, who are found in each region. The provision of internet facilities in the ZOU regions are in line with Stevens (2007) who argued that the structures, organisation and process of teaching and learning have been revolutionised by the internet, personal computers and ICT.

The setting up of data centre and student mail server were mentioned by 60% and 80% respectively, and these respondents pointed out that the setting up of ZOU online was a major step in the institution with regard to ICT development, Fifty percent (50%) of the respondents were of the opinion that ZOU has also upgraded its staff mail server, and this is assisting in the process of communicating with students.

Eighty three percent (83%) of the respondents indicated that the challenges that ZOU faced in the development of ICT include the high cost of computers, inadequate access to technologies, poor national and international bandwith as well as lack of skilled manpower. The above sentiments were also echoed by Ndlovu (2009) who practically came with the same conclusions when he carried out a study on the challenges which ODL faces in trying to implement ICT programmes. Seventeen percent (17%) of the respondents submitted that the non- availability of electricity in some parts of the country, coupled with load shedding in those areas, which have electricity are the main challenges affecting ZOU in its bid to introduce ICT in the regional centres as well as district centres. The observations made by the respondents were also highlighted by Nenge and Mapolisa (2012) who argued that in southern Africa, some of the challenges are emanating from erratic electricity supplies which are crucial in making direct impact on ICT. Robinson (2008) also echoed similar sentiments when he argued that African universities which should be in the forefront of ensuring Africa's participation in the ICT revolution, are themselves unable and are

ill-prepared to play such a leadership role, because of poorly developed information infrastructure of African universities.
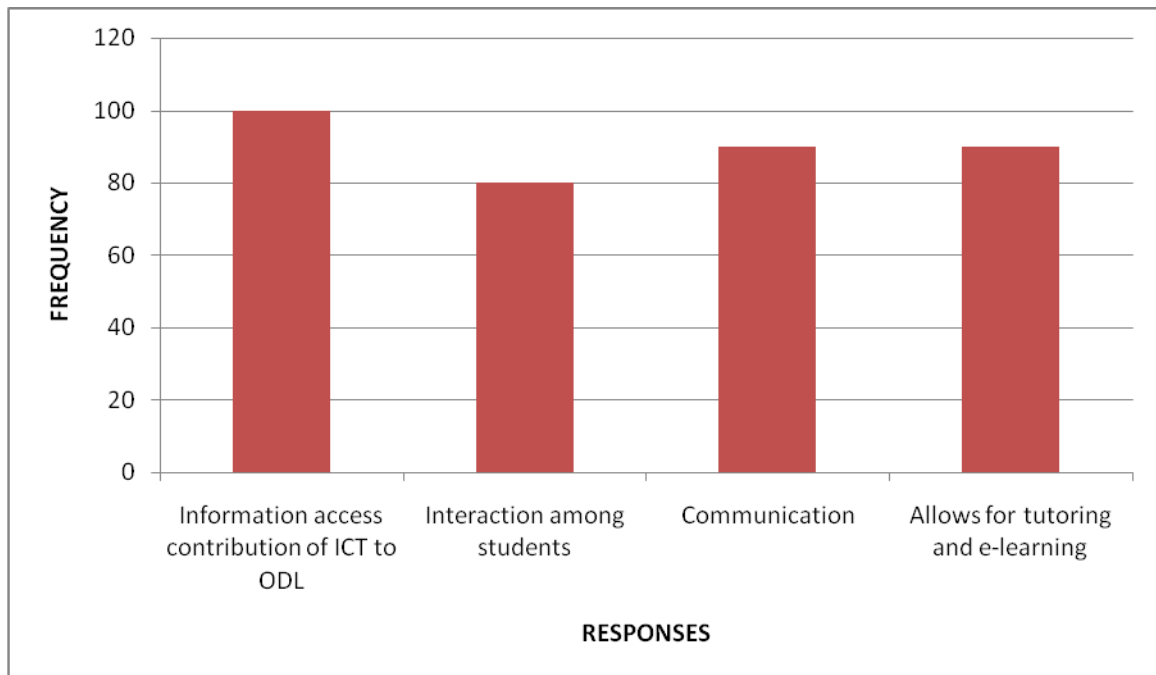

Figure 1. *The contribution of ICT in improving access to education at ZOU*
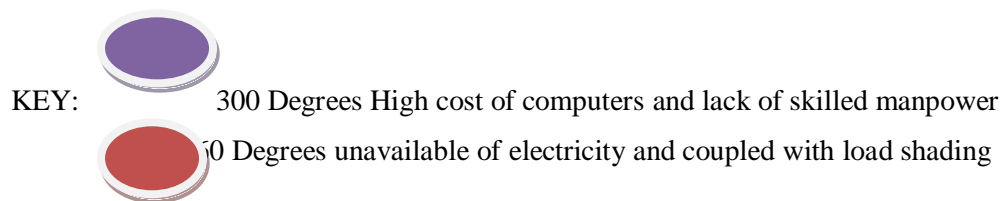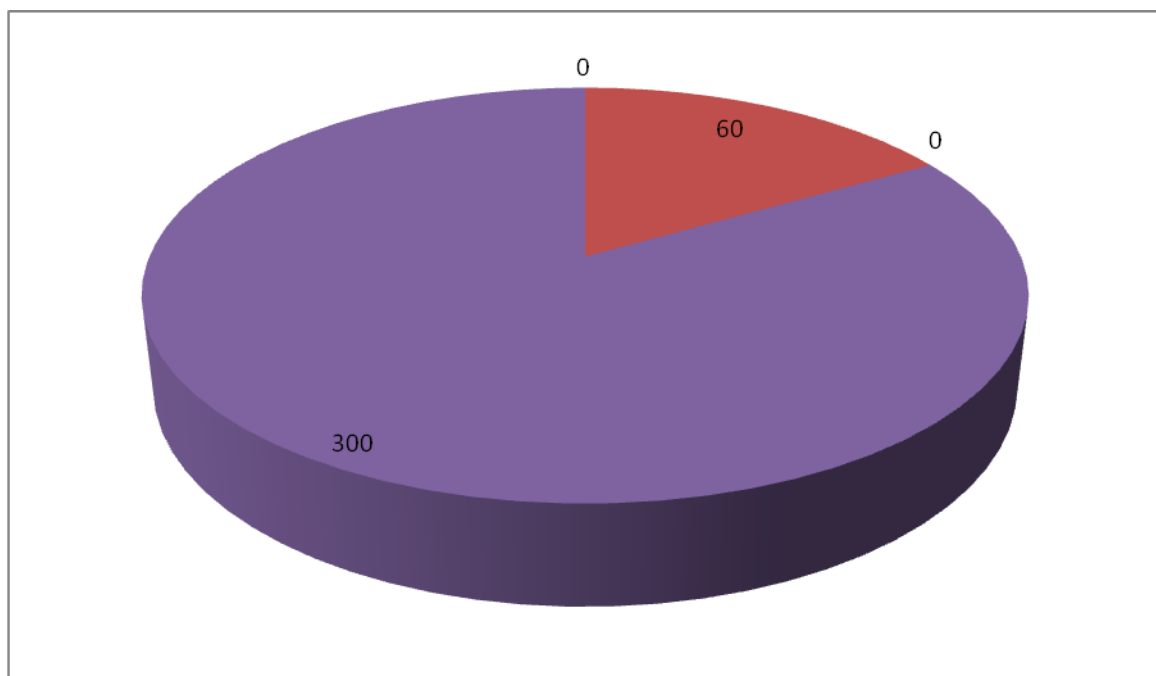

KEY: 300 Degrees High cost of computers and lack of skilled manpower

60 Degrees unavailable of electricity and coupled with load shading

Figure 2 *The challenges of introducing ICT at ZOU regional centres*

10. CONCLUSIONS

Based on the findings of this research it can be concluded that the introduction of multimedia has assisted ZOU in its endeavour to become a world class university, with regard to registration, learning packages, e-tutoring, admission and the regional communication with its students. Multimedia technologies have abridged the distance of students in their rural homes with that of the regional centre, and have increased the social interaction among students and lecturers, through the various social platforms.

11. RECOMMENDATIONS

- ZOU management should increase the number of ICT technical personnel, and increasing access to the internet by installing of more internet service points in the regions

- ZOU needs to form partnerships with other institutions of higher learning as well as the corporate world so that it can source for funding to purchase ICT gadgets.

- ZOU needs to upgrade ICT facilities and systems at the national centre and the regions.

- ZOU needs to regularly provide its staff with up to date hardware and software packages that are user-friendly.

- ZOU staff needs to be trained in ICDL which will make them well versed with computers.

- ZOU needs to ensure that every region as well as the national centre have a generator which will be used in the event of load shedding

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