THE UTILISATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES BY DISTANCE EDUCATION STUDENTS AND LECTURERS AT THE UNIVERSITY OF ZAMBIA

BY

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By

HUMPHREY KATYE MAKUNKA

A Dissertation submitted in partial fulfillment of the requirements for the award of the degree of Master of Education in Adult Education of the University of Zambia

DECLARATION

I *Humphrey Katye Makunka* do solemnly *declare* that this Dissertation titled: Utilisation of Information and Communication Technologies by Distance Education Students and Lecturers at the University of Zambia is my own work and that all the sources that I have quoted have been indicated and acknowledged by means of complete references and that this dissertation has not been submitted previously to any institution.

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This Dissertation titled Utilisation of Information and Communication Technologies by Distance Education Students at the University of Zambia by *Humphrey Katye Makunka* is approved as a partial fulfilment of the requirement for the award of the degree of Master of Education in Adult Education of the University of Zambia.

Examiners Names and Signatures

Name Signature Date

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DEDICATION

This Dissertation is dedicated to mother and father who encouraged me to enroll in the master's programme. My mother was a fortress as she always asked me whenever I visited Lusaka from Katete, if I had gone to see my supervisor, Dr Emmy H Mbozi, who also encouraged me at every point when I appeared to be slackening.

I will always be grateful to their love, inspiration and encouragement in the deepest hours of need of my social and academic endeavor's, which have seen me this far.

May God bless you all!

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ABSTRACT

The delivery of distance education depends on Information and Communication Technologies, namely, print, telephone, audio, video conferencing and radio, video and computer-based technology. Against this background, this study looked at the utilisation of information and communication technologies in distance education at the University of Zambia.

The objectives of the study were to: (i) to assess the level of knowledge on information and communication technologies among lecturers and students; (ii) to determine the extent of distant learners access to learning materials through ICTs; (iii) identify the most commonly utilised ICTs by students and lecturers; (iv) establish the measures the University of Zambia's Institute of Distance Education put in place to increase ICTs and lastly (v) investigate the main challenges faced in integrating ICTs in the delivery of the curriculum content.

The study employed descriptive survey design. Information was collected from students, lecturers and administrators. Multi-stage combined with systematic technique was used to select students, and purposive sampling was used to select lecturers and administrators. Data was collected using interview guide for administrators from IDE and questionnaires for both lecturers and students. Data was analysed in this manner; Qualitative data employed content analysis and generation of themes; Quantitative data employed simple quantitative analysis techniques such as: the generation of frequency tables, cumulative percentages and graphs.

The study found that the awareness from both lecturers and students on ICTs was high. The majority of students indicated that they received their course materials via posted mail and it took a lot of time to reach them. With regard to utilisation, this study found that there was low utilisation of internet and other ICT gadgets, such as the camera but relatively high utilisation of some computer programme such as Microsoft word. It was found that the majority of students and lecturers had never done any kind of training in ICT; hence they had limited skills to use ICTs. Very few students were able to take a photo on a digital camera and include it in an assignment or research work. The extent to which distance students accessed learning materials through ICTs was little. The efforts put in place for distance students to access ICTs have not been much. The introduction of email addresses for all students has not been put to good use, 95.2 per cent of students had never received assignments by email.

In conclusion this study basically shows that utilisation of ICTs by both students and lecturers was low. The skills to operate some ICTs programmes especially on the computer were also limited. Management did not supplement print materials with audio, audio visual or internet-based. The Institute of Distance Education at the University of Zambia should make compulsory training in information communication technology for all first year students or attaining a certificate in ICT before joining the institution. IDE should also train the lecturers in the relevant ICTs such as Microsoft word, use of the internet and power point presentations. The University of Zambia should increase funding for ICT expansion in distance education so that the institution can also compliment print materials with audio tapes, DVDs and uploading information on the internet such as modules. Future researches should carry out studies to determine utilisation of ICTs following the setting up of computer laboratories in provincial capitals of Zambia.

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ACRONYMS

AIDS:	Acquired Immune Deficiency Syndrome
CD-ROM:	Compact Disk Read Only Memory
DTEP:	Distance Teachers Education Programme
DVD:	Digital Versatile Disk
ECOWAS:	Economic Community for West African States
E-Mail:	Electronic Mail
FNDP:	Fifth National Development Plan
FUC:	Fedral Unity Collage
GSMC:	Global System for Mobile Communication
HIV:	Human Immune Virus
HSS:	Humanities and Social Sciences
ICTS:	Information Communication Technologies
IDE:	Institute of Distance Education
IUC:	Inter University Council
IP:	Internet Protocol
NCC:	National correspondence College
NGO:	Non-Governmental Organisation
ODL:	Open Distant Learning
PDF:	Portable Document Format
PHD:	Doctor of Philosophy
SPSS:	Scientific Package for Social Sciences
TV:	Television

VCR:	Video Cassette Recorder
VLIR:	Vlaamse Interuni verstire Raad
UNZA:	University of Zambia
UNESCO:	United Nations Education for Scientific Cooperation
US:	United States
USD:	United States Dollar

CHAPTER ONE: INTRODUCTION

1.0 Chapter Outline

This chapter presents the concept of distance education, the characteristics of distance learners, the concept and evolution of ICTs and generations of distance education. The chapter also presents the statement of the problem, general objective, objectives, research questions, significance of the study, operational definition of terms, theoretical frame-work, delimitation, limitations of the study and organization of the dissertation and summary.

The Concept of Distance Education

Through the years, various terms have been applied to describe the system of offering courses to people who were not present at a particular place of learning. Keegan (1980: 13) identified six terms which appear frequently in the literature of the English-speaking world, these being:

(i) Correspondence study;

(ii) Home study;

(iii) Independent study;

(iv) Distance teaching; and

(v) Distance education.

All the terms above are good but they do not describe the system of offering courses to people who are not present at a particular place of learning. For instance, "a student is classified as external when the institution makes special arrangements whereby the student need not attend the institution for lectures, tutorials or other regular contact with a supervisor" (Dorothy J. W, 1984:2).

Distance education is the acceptable term used rather than the other concepts because:

(a) It denotes a separation between the teacher and the leaner. Although there may be contact by telephone, visits by staff to students or vice versa as at study schools, the teaching-learning process is basically done with a physical separation between the teacher and the learner:

(b) The term allows for teaching by a variety of means. This can include telephone, television, radio, video or cassette tapes, slides or computers (therefore not correspondence study);

(c) It allows for guidance by the teacher. The learner is no limited to the materials with the teacher throughout the learning process. The learner as well as the teacher can initiate the interaction equivalent to the seminars, tutorials and individual consultations (therefore not simply distance teaching); and

(d) It allows for learning at study centres or at the original institution. Such instances can be on an individual basis by the learner or in a group as at a tutorial or an on-campus study school (therefore not off-campus studies, home study, independent study or distance learning).

Distance Education = Distance Teaching + Distance Learning (Keegan, 1980, 1980:32); but also the movement of staff off-campus to see students and the movement of students to study centres or on-campus to see staff and other students.

The term 'distance education': "Covers all various forms of study at all levels which are not under the continuous, immediate supervision of tutors present with their students in lecture rooms or on the same premises but which nevertheless, benefit from the planning, guidance and tuition of tutorial organisation" (Holmberg, 1977) in Keegan (1990: 38).

Keegan, (1988: 6-31), states " while recognising non-contiguity as an element differentiating distance education from conventional education, it allows for the possibility of a teachers being present on occasion or for selected tasks."

In Holmberg's (1977), definition, the dimension of the existence of a providing organization is added to 'distance' while in the latter definition by the French Law of 1977, a third element of distance education emerges and this is the possibility of occasional face-to-face sessions. Moore (1973) quoted in Keegan (1988:60) acknowledges the non-contiguity of the teaching learning process and the existence of communication between teacher and learner. He emphasizes that communication can be offered by print, electronic, mechanical or other means. Looking at these definitions, one or more elements of distance education none of them completes itself. Even what Keegan (1990: 105-114) tried to put together from various definitions as characteristics of 'Distance Education' was rejected by many educationists.

Keegan states that Distance education is an activity which has the following characteristics:

(a) "Quasi-permanent separation of a teacher and a learner throughout the length of the teaching process;
(b) Quasi-permanent separation of a learner from a learning group through the length of the learning process;
(c) Participation in a bureaucratised form of education provision; and
(d) Utilization of mechanical or electronic means of communication to carry the content of course; and
(e) Provision of means for two - way communication so that the learner can benefit from or initiate dialogue" (Keegan, 1990:15).

Garrison and Shale (1990:25) assert that "there are only three characteristics that should be recognised as essential characteristics of distance education:

(a) The lack of contiguity between learners and teachers and learners and peers;
(b) Provision of two way communication; and
(c) The use of technology to mediate between learners and teachers."
(Garrison, 1990:25)

From Keegan's (1990: 105) proposed characteristics of distance education, Baath (1981: 213) queries industrialisation as a general characteristic. The argument on the definition of 'distance education' can go on without coming to a conclusion. All concerned in this field will agree that there are basic elements which distinguish distance education from other forms of education. These two elements which can be considered essential are:

(a) Separation of teachers and learners; and
(b) The planning of an educational organization.
(Garrison, 1990:25)

The Characteristics of Distance Learners

Moore and Kearsley, (1996) describe the distance learner as someone:

(a) Between the ages of 25 – 50,
(b) Slightly more likely to be female,
(c) Probably married,
(d) Probably employed fulltime,

(e) Studying for the purpose of a better job.

The gender may vary from country to country. In many parts of the developing world it is unusual to find more female learners than male learners and there are likely to be fewer older learners. Universally, distance education has attracted working adults but in many countries they are experiencing an increasing number of school leavers who are choosing distance education as their preferred alternative for higher education. Distance learners have certain personality characteristics. They are usually:

(a) Good at planning, relatively self-disciplined, and self-directed.
(b) Self-motivated and responsible because they have taken a decision to study notwithstanding the difficulties of studying at a distance.
(c) Have a positive self-image.
(d) Independent and willing to question what they are learning because of their broader experience of life.

Distance learners might prefer the flexibility of distance learning because of the demands of their varied life roles and responsibilities. However, in complex fields, like learning, it is not adequate to typify individual learners as "average". Learning is experienced at the individual level, and many problems concerning attrition in distance education are experienced at the individual and personal level, irrespective of the "average" statistics of the distance learner. Nonetheless, these statistics help us to understand that the majority of distance learners are different from the traditional cohorts associated with full-time campus universities. It would be fair to conclude the distance education audience is more heterogeneous than the "typical" undergraduate cohort at a residential university. Without disregarding the problems of describing learners as "typical" distance education students, you will need to think carefully about the learners in your specific distance education context.

The Concept and Evolution of ICTs

Abdulsalam, (2008) postulate that information can be defined as knowledge communicated by others or obtained from investigation of study or instruction. It could be the process by which the form of an object of knowledge is impressed upon by the apprehending mind so as to bring about a state of knowing. Technology, on the other hand, is the science of application of knowledge to practical purposes. Technology determines the quality of life of a people and

the overall status of their nation (Momah, 1999). Information has been the driving force of so many human activities in search of developing one's self, which has created a basis for the need toknow.ICT stands for Information and Communication Technology and is defined as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information." The term ICTs refers to forms of technologies that are used to create, store, share or transmit, and exchange information. This broad definition of ICT includes such technologies as radio, television, video, DVD, telephone (both fixed line and mobile phones),satellite systems, computer and network hardware and software; as well as the equipment and services associated with these technologies, such as videoconferencing and electronic mail (UNESCO, 2002).

The steady evolution of ICTs (radio, television, interactive video, electronic mail, world-wide web) has considerably influenced the development of distance learning (Jones & Knezek, 1995). The first generation of distance learning, using traditional printed material and communication via post and telephone, was superseded by second generation audio recordings, radio and television broadcasts (Southworth,1981). Both first and second generation distance learning delivery systems were designed primarily to produce and distribute learning materials as efficiently as the technology of the day permitted without any attention to the lack of interactive communication between students and teachers.

Generations of Distance Education

The evolution of distance education can be traced in three main generations which reflect increased use of information and communication technologies by both students and their teachers. These generations are briefly described below.

The First Generation: Correspondence Study

By the end of the 19th century, it was well established in the form of correspondence study. In its original form correspondence study basically involves the use of print based course materials and the postal service. Therefore this educational communication takes place in an asynchronous environment which uses, one way technologies that preclude the creation of public space and interactivity that grounds a real communication that brings about change.

It is argued that, the beginnings of correspondence study depended on the emergence of the same factors that contributed to the birth of adult education visa vi adult literacy, the printing press, a publishing industry, mass production, low cost pens and their demand, brought on by the demands of the Industrial Revolution for an educated workforce. Addition to this list is the introduction of a cheap and reliable postal service, an efficient transportation system and, in some countries like Canada and Australia, large, sparsely populated areas which did not have close access to on campus training (Hamilton, 1990). The first recognized correspondence courses were done, in England, in 1840 by Isaac Pitman who offered shorthand courses to aid in business administration (Verduin and Clark, 1991). This British model of correspondence study was spread around the globe by colonialism and adapted to local needs. For example, in Australia, the introduction of mandatory childhood education created the need for more teachers, many of whom were educated by correspondence courses (Kingston, 1999). In addition to this technological development, Holmberg, (1986:46) points out that, the two World Wars promoted the growth of distance education. The armed services demanded correspondence education for soldiers during World War I and soldiers returning from World War II looked to education, including correspondence study, as a way to change society after the horrors of the two World Wars and the Depression.

The Second Generation: multimedia distance education

Holmberg, (1989: 1), says that, "the term correspondence was felt by many to be too narrow" and "distance education" became the designation of choice for education that was no longer simply tied to print material and the postal service. This second generation of multimedia distance education integrated the use of print with broadcast media, cassettes, and to some degree computers (Nipper, 1989). This type, increased the two way communication, which, often squandered by emphasizing the quantity and seamlessness of production over the quality of the learning experience, especially group interaction and social learning. Like the first generation of distance education, the main objective of the second generation has been: the production and distribution of teaching/learning material to the learners. Communication with the learners has been marginal, and communication amongst the learners has been more or less non-existent. (Nipper, 1989: 63)

A number of factors contributed to the growth of the second generation of distance education, new communication technologies, growing sophistication in the use of printed

materials, improved support services for distance students and the establishment in 1969 of the Open University of the United Kingdom (Keegan, 1990). The Open University in the second generation of distance education became a reflection of the time and place in which it arose as a program within an institution, and an influence on numerous institutions in subsequent years. More than any other occurrence, its establishment is categorized in different ways by different authors as in the case of Holmberg, (1986: 30) as "the beginning of a more prestigious era in the history of distance education". The use of multimedia carried out in the combination of correspondence instruction, supplementary broadcasting and publishing, residential short courses, and support services at the local and regional levels modernized and revitalized the approach to distance education (Selman and Dampier, 1991). In the early multimedia course model of the Open University, employed was the use of one way technologies that included the radio and television broadcasts, and audio and video cassettes, in addition to its preponderant specialization in print based correspondence courses (Woolfe, 1977: 82). In the early 1990s, some Open Universities begun to embrace third-generation, distance teaching technologies, in this sense was the process of changing its teaching to new teaching systems that encouraged more interactivity. However one would think that by this time, there will be acceleration of the development of new educational communication technologies, but the vast majority of distance education throughout the world at the end of the 1980s was still primarily print-based (Bates, 1993). A critical analysis at what Bates, (1993:40-50), alluded to, in the use of radio and television, for distance education, as creating a "cult of the expert", which lends to the professionalization, legitimatization, commoditization and instrumentalisation of certain forms of professional knowledge which requires experts to do certain things, in the learning process. Nipper, (1989: 63) concludes that, "such a conception of knowledge, rules out the kind of knowledge that is built through people learning together to achieve social change. However like the first generation of distance education, this generation also promoted the system serving forms of distance education that included professional accreditation, military training and human resource development. Although the second generation of distance education presented the potential for transformation through the power of communication because of its two way communication possibilities (e.g. teleconferencing), it wastes this potential by concentrating on one-way communication, expert knowledge, mass marketing and student independence. All in all, like the first generation of distance education, the second generation only served the system, but did not really offer true social change in the individuals' personalities (Bates, 1991).

The Third Generation: computer-mediated distance education

Noble (1995) refers to the 21st, centaury as the second Industrial Revolution due to the information communication technologies in use. In the first Industrial Revolution of the 19th century, the context of the economy shifted from homes and household workshops to factories and offices; now it is shifting to the infrastructures of the information highway (Menzies, 1996) and back to the home. The harbinger of this second Industrial Revolution, the vehicle of this so-called knowledge-based economy is the computer. The information highway has made inroads into almost every facet of everyday life, including distance education. But in many ways its vaunted promise merely masks the way education is being used to achieve student conformity and adaptation to dominant ideologies of society (Spencer, 1998).

It is argued that due to the, incessantly repeated necessity of acquiring the skills needed for the so called knowledge based economy, becoming educated has become a tool to serve economic purposes, and not for social purposes. Therefore getting knowledge by distance education has created a dependency on technology (Spencer, 1998). This generation of distance education aided by sophisticated and improved information communication technologies, has the capacity to train large numbers with limited resources. This is done in the same vein with mass production of commodities. Therefore within this knowledge based economy, open and distance learning can produce large numbers of skilled personnel within the same period of time as the main stream education system at affordable fees, but without regard of their individual social needs. Thus it is argued that no questions are asked, or encouraged, about the difference between knowledge and non-knowledge, not even by the academic world, as regards the purpose of education. Even in the information communications technology age, distance education's traditionally individualized learning experience is continued in the use of the Internet and the World Wide Web. Modular coursework, self-paced quizzes, CD-ROM and linked websites may add to a student's information overload, but do nothing to provide the vital interaction so necessary for dialogue, social learning and participatory development. However it is encouraging that, one aspect of the information age holds out the prospect for interactivity, social learning and public space, and that is in the computer conferencing (Spencer, 1998). One has just to realize that computer conferencing is full of issues like access, power and self-confidence. For Spencer (1998: 124) access has the "tendency to closure" in distance education. In this case,

example is given, in the increased use of computer conferencing which could result in greater student interaction, but only for those who have the equipment and skills to participate.

As a result of the development of enhanced third generation distance learning systems which include interactive video, email, and world-wide web technologies, learning activity has been redefined to include teacher–student interaction (Katz, 1998; 2000; Trentin, 1997). Interactive video–conferencing or interaction by way of online Internet-based instructional and learning packages offer one-to-many tuition in which teachers and students are able to communicate synchronously there by solving instructional and learning problems in real time (Becker, 1984).

Third generation distance learning is flexible, and allows teachers to continuously monitor overall progress of students as well as permitting tutors to modify, reinforce and even model educational processes, thereby meeting the cognitive needs and requirements of students (Wilson & Whitelock, 1997). Interactivity of all types has also been shown to meet general student needs more comprehensively than other distance learning modes. Interaction transports students to a new cognitive environment which motivates and activates them (Finnie, 1989). Research studies have indicated that third generation distance learning is especially suited to higher education (Hoyle, 1983). In addition, the interactivity available in these approaches promotes active engagement of students in the learning process and leads to improved academic achievement (Trentin, 1997).

Some research studies have indicated that the various modes of interactive distance learning technologies give rise to positive change in the instructional and learning processes when compared with earlier distance learning systems (Yablon & Katz, 2001; Wilson & Whitelock, 1997). Other studies have emphasised the importance of student activity provided for by interactive distance learning systems and have indicated that the student activity variable contributes significantly to improved student achievement (Trentin, 1997). In addition, interactive systems, in which teachers or tutors present formal lectures or study material from a studio geographically far removed from the classroom where the receiving students are located, promote a high degree of cost effectiveness and efficiency (Tan, 1992). This study found it necessary to review the literature on the generations of distance education in details so as to understand the evolution of ICTs in distance education.

1.1 Background of the study

The University of Zambia (UNZA) was established in 1996 following the recommendation of the Lockwood commission report (Lockwood, 1964). When the university was opened in 1966 it had 310 full time students (Kelly, 1991). Over time the enrolment numbers went up. This increase could be explained by the fact that the University wanted to provide opportunities to as many Zambians as possible as to meet the human resource the country needed. In the 1990s the enrolment reduced due to inadequate physical facilities and shortages in financial and human resources (Siaciwena, 2000).

To respond to the countries need for human resource development at the time of political independence and the demand for this level of education from people who had got into employment without university education. Distance education was therefore, identified as a means of expanding enrolment for university education (Siaciwena, 1998). According to the University of Zambia strategic plan (2001:24) the distance education programme was the means of providing wider access to a range of entrants through; diversified and flexible formats of study, to carter for those unable to participate in regular schemes of study through the effective utilisation of the existing Information and Communication Technology infrastructure especially its use in distance education.

Distance education is now recognised all over the world as a mode of education which helps large numbers of learners to access quality education (Koul and Jenkins, 1990). Through this mode, quality education is made accessible at very low costs to people whose work, family responsibilities or even personal preferences would bar them from attending college on a full time basis (Moore 1990; Verduin and Clerk, 1991). It also provides opportunities to design flexible curricular for a wide spectrum of clientele who may take courses at their own time depending on their ability and convenience.

Information communication technology tends to expand access to education. Through ICT, learning can occur anytime and anywhere. Online course materials, for example, can be accessible twenty four hours a day, seven days a week. Teleconferencing classrooms allow both students and lecturers to interact simultaneously with ease and convenience. Based on ICT, learning and teaching no longer depend exclusively on printed materials. Multiple resources are abundant on the Internet, and knowledge can be acquired through video clips, audio sounds, visual presentation. Current research has indicated that ICT assists in transforming a teaching environment into a learner-centred one (Castro Sánchez and Alemán,

2011). Since learners are actively involved in the learning processes in ICT classrooms, they are authorised by the teacher to make decisions, plans, and so forth (Lu, Hou and Huang, 2010). ICT therefore provides both learners and instructors with more educational affordances and possibilities.

1.2 Statement of the Problem

Research in Zambia found that post services as a means of communication and interaction has been labeled as being slow (Chifwepa, 2006). Newer means of communication are better than the old ones. Alternative means of communication, particularly use of new Information and Communication Technologies, can if utilised enhance speed of this communication. According to Holmberg (1986) and Rumajogee (2002), distance education was referred to correspondence. Although the name has since been changed to distance education to highlight the learner's position in relation to the teacher, the process of communication which is correspondence is still central to distance education. New modes of communication, such as information and communication technologies are necessary for enhancement of distance education objectives. Learners tend to be motivated by being in close touch with their facilitator or teacher's as such quick feedback is a necessity. However use of ICT by distance learners and lecturers for distance education purposes is not known.

1.3 General Objective

To find the extent students are utilising ICTs in distance education

1.4 Objectives of the study

The objectives of the study were to:

1. Find out the level of knowledge on ICTs among lecturers and students.
2. Determine the extent of distant learners' access to learning materials through ICTs
3. Identify the most commonly utilised ICTs by students and lecturers
4. Establish the measures the University of Zambia IDE put in place to increase ICTs
5. Investigate the main challenges faced in integrating ICTs in the delivery of the curriculum content.

1.5 Research Questions

1. What are the levels of knowledge on ICTs among lectures and students?
2. What is the extent of distance learner's access to learning materials through ICTs?
3. What are the most commonly utilised ICTs by lecturers and students?
4. To establish what measures the University of Zambia IDE put in place to increase ICTs access by students?
5. What are the main challenges faced in integrating ICTs in the delivery of the curriculum content in distance education?

1.6 Significance of the Study

The study provided insights into the level of knowledge on ICTs from the lecturers and students. It established the extent distance students were accessing learning materials through ICTs in their various locations in Zambia. The study equally showed what had been put in place by the Institute of Distance Education for the learners to access ICTs. Most commonly used ICTs by the lecturers and students in distance education were identified. This study would be important to the policy makers and administrators of distance education at the University of Zambia in that it will avail them information on the utilisation of the ICTs from lecturers and students. This study would also assist other universities and colleges offering distance education decision making in the application of ICTs.

1.7 Delimitations of the Study

Institutions offering distance education in Zambia are many. But because of time and in order to be focused, the study was based on the Institute of Distance Education at the University of Zambia. In particular the study was limited on the utilisation of ICTs by lecturers and distance education students.

1.8 Theoretical Framework

The theories of interaction and communication advocate effective delivery of the instructional message through well-structured presentation, guided didactic conversation and feedback through assignments, letters, telephone and occasional face-to-face contact (Holmberg, 1988:115), Interaction and communication are demonstrated at the university where external students are allowed to meet their tutors/lecturers and fellow students through tutorials and lectures. This is said to foster feelings of closeness and alliance with the providing institution, thus helping to maintain motivation and promote success.

According to Moore, (1980), the physical separation between the teacher and the learner in distance education led to psychological and communication gap and it could also led to misunderstanding between the input of the instructor and those of the leaner.

The theory of interaction is more central to this study because it deals with the use of study of materials or content. Moore, (1988) theory of interaction is that all actors in distance education need to be engaged in educative interactions. Use of ICTs was perceived to be a strategy that would enhance interaction and communication, and thus the theory framework for assessing the interaction between lecturers and students, IDE and students. Utilisation was perceived to be a measure of actual interaction and communication.

1.9 Operational Definitions

Accessibility of ICT- refers to having physical contact and permission to use the ICT facilities or gadgets. It includes free or charged usage. Indicators of accessibility include availability and reach in terms of physical access and permission to use Chifwepa. V. (2006).

Delivery – the process of giving and learning which is planned and guided by the school. For example, classes during residential school Daka, J.P. (1987*).*

ICTs - The term ICTs refers to forms of technologies that are used to create, store, share or transmit, and exchange information. This broad definition of ICT includes such technologies as radio, television, video, DVD, telephone (both fixed line and mobile phones),satellite systems, computer and network hardware and software; as well as the equipment and services associated with these technologies, such as videoconferencing and electronic mail (UNESCO, 2002).

Integrating – the process of combining the existing mode of doing with things with the inclusion of ICTs Levin, T. and Wadmany, R, (2006).

Utilisation – the use of Information and Communication Technologies by students and lecturers to facilitate learning through distance education Chifwepa. V. (2006).

1.10 Organisation of the Dissertation

Chapter one presents the background to the topic under study. The chapter further presents the statement of the problem and explains the significance of the study. This is for the purpose of making the reader grasp the relevance of the topic under study. The next chapter, which is chapter two tackles literature review. This chapter provides a review of relevant literature to the topic under study.

Chapter three discusses the methodology that was employed to carry out the study. It outlines the methods which were used in data collection and data analysis. The chapter further outlines the research design, target population, sampling procedure, research instruments that were used.

The findings of the study are presented in chapter four which also addresses both research questions while chapter five discusses the findings under the headings drawn from the objectives of the study and presents the conclusion and recommendations based on the findings of the study.

1.11 Summary of Chapter one

Chapter one focused on the issues relating to the background information of the study on the importance of utilisation of information communication technology in distance education. Further, it also highlighted the importance of education. The chapter further outlined the objectives of the study, research questions, and significance of the study, delimitations of the study, operational definitions and theoretical framework

CHAPTER TWO: LITERATURE REVIEW

2.0 Literature Overview

This chapter explores relevant literature on the levels of knowledge on information communication technologies, access Information communication technologies, utilization of ICTS, benefits of using ICT in education , measures to increase utilization of ICTs and factors influencing the use of ICTs and challenges of in distance education in trying to use ICTs.

2.1 Levels of Knowledge on ICTs among Lecturers and Students

Regardless of the quantity and quality of technology available in classrooms, the key to how ICTs are used is the teacher; therefore, teachers must have the competence and the right attitude to-wards technology (Kadel, 2005). Competence is defined as the ability to combine and apply rele-vant attributes to particular tasks in particular contexts. These attributes include high levels of knowledge, values, skill, personal dispositions, sensitivities and capabilities, and the ability to put those combinations into practice in an appropriate way (Commonwealth Department of Education, Science and Training, 2002).

In the study conducted in Nigeria by A.C, Igomu and S, Iyekepolar, (2015) revealed that the competency level of Fedral Unity Collage (FUC) teachers is low and majority of FUC teachers cannot utilise ICTs in teaching their subjects. Most teachers have personal computers/laptops but have little or no competence in the usage of ICTs. It is apparent that the main skill acquired by the teachers is in Word processing which can be attributed to typing of examination, test questions, student record and so on by the teachers. Again, access to internet by the teachers was mainly private indicating inadequacy of the facility in the colleges. Majority of the teachers rated their ICTs competence as low.

It has been discovered that knowledge of ICTs usage improves human capacity in every field of human endeavour, including business transactions, industrial operations, educational programmes and life in general. In the field of education. Radloff, A. (2001) highlights the opportunities that ICTs presents for enhancing the quality of teaching and learning to include: providing encouragement for teachers to reflect on how they teach and learn; applying theory and research on learning and principles of good instruction to designing online learning environments; making teaching and learning more visible and public; encouraging

collaboration and teamwork among teachers (and students); offer greater access to learning for more people.

2.2 Access to ICT Resources

Pickersgil (2003) found out that the ease of access and ICTs facilities allow Academics to become experts in searching for information rather receiving facts. He claimed that ease of accessibility increases that awareness of the world around them. Lack of access to much needed infrastructure is the result of insufficient funds (Ololube , 2007).While ICTs continues to advance in western and Asian countries, African countries still experience a lag in its implementation, and that continues to widen the digital and knowledge divides. Kiptalam, (2011) observed that access to ICTs facilities in higher learning institutions is a major challenge facing most African countries, with a ratio of one computer to 150 students against the ratio of 1:15 students in the developed countries. In Zambia access to ICTs has proved to a challenge especially for those students staying in the rural areas are the most affected. Some rural places are not even serviced with electricity and mobile networks.

2.3 Utilisation of ICTs by Students

In terms of the utilisation of ICTs in Africa findings show varied utilisation levels particularly with regard to the type of ICTs, for example in Tanzania the study revealed that the majority of students did not use internet due to the inadequacy of computer with internet facilities. Bhutan is a small landlocked country in southern Asia, between China and India. The research indicated that the usage of ICTs in distance teachers education programme (DTEP) has mainly been for administrative support and information dissemination functions rather than for academic support like discussion of students study- related problems. In Zimbabwe on utilisation students pointed out that in their programmes modules and up-to date books covering their course outlines were limited there forced by circumstances to make use of the internet when writing assignments, research and preparing for examinations.

ICT provides opportunities for distance education students and academic and non-academic staff to communicate with one another more effectively during formal and informal teaching and learning (Yusuf, 2005). For this reason, distance education programs in Zambia need to integrate ICTs into their agendas, because the quality of teaching using ICTs to gain access to information is known in virtually all countries to be a key predictor of quality student learning. Therefore, effective manpower training is crucial using ICTs, because ICTs are

tools that on the one hand can facilitate human resources development, and on the other hand, help us to take full advantage of the potential of technology to enhance quality student learning via distance education (UNESCO, 2003).

According to an informal survey conducted in Bhutan during the Distance Teacher Education Programme (DTEP) residential school in early 2005, 74% of the students have access to a telephone at home. Seven regional study centers around the country provided Internet access and basic facilities such as printing, telephone and fax, to provide asynchronous modes of communication of benefit to students who do not have ready access to computers and the Internet (Gyatsho, Daker, Galey, & Jamtsho, 2005). These centers are located in schools identified as education resource centers. A teacher from each of these schools has been trained as coordinator. Besides serving as access points for information and communication technology (ICT) support services, these centers are designed to provide students with "the support and friendship of other people in addition to what can be provided through machines or the written word" (Mills, 1996, p. 85). It is hoped that these centers will grow into environments for activities such as peer tutoring, faculty visits, arranging for local teacher coaches, and group work in the near future. Thus, the usage of ICT in the DTEP (primarily the telephone) has mainly been for administrative support and information dissemination functions rather than for academic support, for example, discussion of students' study-related problems. This shortcoming is compounded by scheduling problems arising from the fact that many DE students and tutors are in full-time employment as classroom teachers. Apart from a limited use of telephonic communication and postal mail, the residential school is the only major opportunity that students have to interact with their instructors or tutors, and receive services such as tutorials and academic counseling. The month-long annual residential school is divided among numerous activities, including face-to-face interaction sessions, examinations, and accessing essential resources from the library..

The DTEP study also found out that problems usually arise when the students begin to study on their own, and are generally very difficult to anticipate during the residential school; and communicating with the learners after the school is largely restricted to the telephone and postal mail, which may take at least 2 weeks to arrive in each direction. In such cases, even the promptest response can take a month or longer. Hence, provision of timely guidance and support constitutes one of the biggest challenges. The DTEP, therefore, runs the risk of being

an isolating experience involving one-way knowledge transmission alone (Paul & Brindley, 1996; Simpson, 2000).

The results suggest that students found the ICT-based learning support of some value overall, and that it improved the quality of their learning experience. It also emerged, however, that there are significant barriers to be overcome in seeking full integration of ICTs into the DTEP. For example, in terms of improving their ability to obtain support, students said that the ICTs system enabled easier assignment submission, and made it easier to obtain tutor feedback. This is clearly due, in part at least, to technical difficulties, notably lack of Internet access and technical support, and low bandwidth.

The new technologies are most attractive for distance teaching. They have the potential to overcome three major problems of 'traditional' distance education: to rescue the isolated students from their loneliness by providing interaction with teachers, professors and tutors, as well as with other peer students throughout the study process; to provide easy access to libraries and other information resources, which was nearly impossible in the past; and to update the self-study materials on an ongoing basis.

Luambano & Nawe, (2004) investigated the internet use by students of the University of Dare es Salaam. Findings revealed that majority of the students were not use internet due to the inadequacy of computers with internet facilities, lack of skills in internet use and slow speed of computers. It was also revealed that most students who used the internet did not use it for academic purposes. It was suggested that more computers connected to the internet should be provided and training should also be given to the students on the use of internet.

Mafa and Mpofu, (2005) researched on to what extent do ODL students make use of ICT in the preparation and writing of assignments and research at Zimbabwe open University? Findings on the extent to which students make use of ICTs in their assignments and research can be divided into two groups – on one side were those students who reiterated that they were using internet extensively, while on the other side were those who said they were using ICTs sparingly:.

Extensive use of ICTs Students pointed out that in their programmes, modules and up-to-date books covering their course outlines were limited, therefore they were forced by circumstances to make use of the internet when writing assignments, researching and preparing for examinations. Some of their sentiments on the extent to which they used ICTs were: *I use internet all the time as it provides current and recent data that assists me in my research area, instead of relying on old outdated information from textbooks. I use ICTs almost every time when I am writing assignments and research projects.* Programme coordinators also corroborated the sentiments raised by the students and library assistants. Some of the programme coordinators' views are captured below: *The greater part of student assignments is done through internet research. Most of our students rely on ICTs (internet) to supplement their modules because the programme has very few hard copy textbooks in the library. The extent to which Open and Distance learning students utilize Information and Communication.*

Use ICTs to a lesser extent An appreciable number of students pointed out that they used ICTs facilities to a lesser extent. Some of their sentiments were: *I do not always rely on the internet, yet I sometimes access it when the need arises. To a lesser extent because computers are always occupied.* Sentiments of less usage of ICTs were also echoed by programme coordinators as one of them pointed out that: *'There is little evidence to indicate use of sources from the internet in the form of references or citations'.* Yet another one said: *'Very few students access information from ICTs'.* The above observations were corroborated by library assistants who pointed out that the extent of ICTs usage should be looked at from two perspectives – the programme of study and the age of students. Regarding the programme of study, library assistants noted that students who used internet extensively were from the Faculty of Social Sciences, least users were from the Faculty of Arts, Education and Humanities – Department of Education. Concerning the age of users, library assistants pointed out that younger students (what we refer to as the ICT Generation) frequented computers regularly as compared to older students. The university's enrolment statistics indicated that Social Science courses were populated by younger students as compared to other programmes. The younger generation group of students was composed of post 'O' and 'A' Level students ranging between 18 – 30 years of age. While older students were those above 30 years of age. It should also be appreciated that most of the younger generation students owned personal laptops and smart phones were they could easily access internet.

Most of them could have been exposed to computers while in high school, making it easier for them to develop ICT skills. On the contrary, older students were not exposed to computers during their days in high school. Chances were that a good number of them did not own smart phones. We also examined the Student Computer Log-in Sheet in one of the university's regional libraries to ascertain the extent to which students from different department utilized library computers. It is interesting to note that out of the many programmes that were offered by the university, only students from 14 programmes used the library's computers during the month under consideration.

According to Mafa and Mpofu, (2005) lack of computer skills was singled out by programme coordinators, library assistants and Open Distance Learning (ODL) students as a very big challenge. Some of the sentiments on this challenge mentioned by students were: *I need guidance on how to research using the system because at times key result areas may not be found. Lack of adequate knowledge on how to utilize ICTs due to lack of background education system from the early stage and income levels hinders payment of tuition fees to learn more from relevant institutions. I am not computer literate.* During interviews with programme coordinators, the ICT skills' level of most students was highlighted. They pointed out that this was a cause for concern. Dominant contributions were: *Know how – very few of them have knowledge on using ICTs for research purposes. ...lack of skills and how to research and lack of ICTs practicals particularly among older students. With some of the students being 'mature' they are not all well versed with the use of computers and ask for assistance in posing search queries and in saving what they have found in the flash drives and get appropriate material at accessing web/search engines.* The students' limitations in the use of computers were also noted by library assistants. They noted that most lack ICTs skills, to the extent of not being aware that they can download onto a saving device such as a flash whatever information they may come across during browsing and later print and read at their own time. After being assisted to find information on the internet, most would want to read, write notes and move to the next article. As a result, students fail to make much headway in the one hour that each student is allocated to access the internet. Students in all the faculties enroll for a computer module during their first year of study. It is assumed that the module prepares students for challenges they are likely to face when trying to access information through the internet, typing own assignments and submitting assignments online and communicating with their programme coordinators and tutors. However, if the concerns raised by students, library assistants and programme coordinators on ICTs skills level of most

students is anything to go by. The effectiveness of the computer module that students are exposed to needs interrogation. During the interrogation, the focus should be on the content of the module as well as the mode of delivery.

Categories of ICT Technologies

Asiamah, (2011) divides ICTs into the four categories:

Capturing technologies with input devices that collect and convert information into digital form. Such devices include keyboards, mice, trackballs, touch screens, voice recognition systems, bar code readers, image scanners and palm-size camcorders. The capturing technologies mostly used by students and lecturers is the key board when typing.

Storage technologies which produce a variety of devices to store and retrieve information in digital form. Among these are magnetic tapes, floppy disks, hard disks, RAM disks, optical disks (such as CD-ROMs), erasable disks and smart cards (credit-card sized cards with memory and processing capacity for financial transactions or medical data). Also, the processing technologies create the systems and applications software that are required for the performance of digital ICTs. The most available storage technologies is the flash disk and the CD-ROMs at the university of Zambia.

Communications technologies which produce the devices, methods and networks to transmit information in digital form. They include digital broadcasting, integrated services digital networks, digital cellular networks, LANs, WANs, such as the Internet, electronic bulletin boards, modems, transmission media such as fibre optics, cellular phones and fax machines, and digital transmission technologies for mobile space communications (the new Low Earth Orbit satellite voice and data services). Students and lecturers own mobile phones and laptops were they are able to access network to transmit information. Some lecturers have computers in their offices were internet is accessed.

Display technologies which create a variety of output devices for the display of digitized information. Such devices include display screens for computers, digital television sets with automatic picture adjustment, set-top boxes for video-on-demand, printers, digital video discs (which might replace CD-ROM drives and audio CD players), voice synthesizers and virtual reality helmets. Display technologies are a very important in terms of accessing and viewing

information, the most accessible at the University of Zambia is display screens for computers, printers, television sets and projectors.

2.4 Utilisation of ICTs by Academics

Educational systems around the world are under increasing pressure to use the 'new' ICTs (UNESCO, 2002 as cited by Yuen, Lee, Law and Chan, (2008) based on the premise that it is important for bringing changes to classroom teaching and learning. These skills include the ability to become lifelong learners within a context of collaborative inquiry and the ability to work and learn from experts and peers in a connected global community (Law, 2008).

The information society demands a workforce that can use technology as a tool to increase productivity and creativity. This involves identifying reliable sources of information, effectively accessing these sources of information, synthesizing and communicating that information to colleagues and associates (Alibi, 2004). Hence, Hawkins (1998) affirmed that information is a key resource for undergraduate teaching, learning, research and publishing. This brings the need for effective methods of information processing and transmission. Laurillard, (2002) highlighted that instructional technology and research initiatives surrounding educational innovation have evolved very quickly over the past hundred years, beginning with the development of the phonograph, radio, film and television and their implementation as teaching and learning tools in tertiary schools. As computer-based innovations were developed, they also became tools in the classroom in many forms (e.g., drill and practice software, simulations, educational games, tutorials, video disks, internet access, email, digital media, personal computers, laptops, etc). Therefore, Lucus and Murray, (2002) concurred that the educational system is being challenged to change as innovative technology changes the interaction with information and knowledge and as new generations of students pass through with new expectations and new needs.

Much literature has described faculties in higher education as comfortable using technologies such as word processing, email, and web searching (Vannatta, 2000), but not comfortable integrating technology into their classroom practices for meaningful learning (Glaser and Hardin, 1999; Ropp and Brown, 2000). The issues of best practices in the innovative use of technology and integration among higher education faculty are not clearly focused and results of research in this area vary widely indicating the need for additional research (Kozma, 2003).

As technological innovation continues in universities, levels of ICT availability, accessibility and use for faculty, schools, students and educational technologists become increasingly important; it is clear that "different technologies are deployed at different rates in different ways at different settings" (Molenda and Sullivan, 2002). Researchers need to investigate effective ways to help each population successfully work with new instructional technologies. Thus, effective professional development may require an understanding of the kinds of motivations and psychological resistances that determine how faculties will decide to use new technologies. Molenda and Sullivan, (2002) opine that the pressure to adopt them in education can only increase. Informing educational leaders and decision makers on the full range of issues concerning development and deployment of technology and innovation is increasingly a critical priority.

The demands on higher education faculties no longer focus solely on content expertise but also on creating active learning environments that integrate technology within content. Faculties can adapt to this role by reflecting, analyzing, observing, implementing, and evaluating successful examples of best practices in technology integration (Ertmer, 1999).

Yusuf and Onasanya, (2004) confirmed the findings in the present study by identifying three specific areas of relevance of ICTs to Academics in the area of research:

i. It provides opportunities for scholars to communicate with one another through email, mailing lists and new groups and chat rooms. These ICTs resources enable communication between scholars as they can post research, assignments, books or journal lists references to on-line materials. Problems and solutions can be discussed between researchers and scholars can react to the work of others in an electronic manuscript. The use of ICTs further provides greater opportunities for research collaboration and networking among scholars spread throughout the world, thus, national and international dimensions of research issues can be studied as they can allow for communication with peers and experts around the world. Through collaborative knowledge building, studies can spotlight trans-national trend analysis through human and instrumentation collaboration.

ii. The use of ICTs can facilitate research in any discipline as they provide quicker and easier access to more extensive and current information through digital

libraries that provide digitized full-text resources to learners and researchers. Others are the electronic list- a directory of scholarly and professional e-conferences containing relevant topics and articles relevant to researchers and electronic reference desks or virtual libraries. Others include electronic journals and catalogues and image database. Others are Internet resources; gopher and CD-ROM can provide a researcher with current, in depth, first-hand information.

iii. ICTs can be used to do complex mathematical and statistical calculations which are important in research. They can be used for data manipulation and analysis. The ICTs will facilitate the compilation of data on time, performance of statistical analysis. In fact, complex statistical analysis are not only performed instantaneously but also more accurately than possible manually.

2.5 Benefits of Utilising ICTs in Distance Education

The merits of ICT in education have been extolled in the literature. The use of ICTs has been found to Assist Students in Accessing Digital Information Efficiently and Effectively. As Brush, Glazewski and Hew, (2008) have stated, ICTs are used as a tool for students to discover learning topics, solve problems, and provide solutions to the problems in the learning process. ICTs make knowledge acquisition more accessible and concepts in learning areas are understood while engaging students in the application of ICTs.

Supporting Student-Centered and Self-Directed learning Students are now more frequently engaged in the meaningful use of computers (Castro, Sánchezand and Alemán, 2011). They build new knowledge through accessing, selecting, organizing, and interpreting information and data. Based on learning through ICT, students are more capable of using information and data from various sources, and critically assessing the quality of the learning materials.

Producing a Creative Learning Environment: ICTs develops students' new understanding in their areas of learning (Chai, Koh and Tsai, 2010). ICTs provides more creative solutions to different types of learning inquiries. For example, in a reading class, e-books are commonly used in reading aloud activities. Learners can access all types of texts from beginning to advanced levels with ease through computers and laptops. More specifically, these e-books may come with some reading applications, which offer a reading-aloud interface, relevant

vocabulary-building activities, games related to reading skills and vocabulary acquisition, and more. Therefore, ICTs involves purpose - designed applications that provide innovative ways to meet a variety of learning needs.

Promoting Collaborative Learning in a Distance-Learning Environment .Koc, (2005) mentioned that using ICTs enables students to communicate, share, and work collaboratively anywhere, any time. For instance, a teleconferencing classroom could invite students around the world to gather together simultaneously for a topic discussion. They may have the opportunity to analyse problems and explore ideas as well as to develop concepts. They may further evaluate ICTs learning solutions. Students not only acquire knowledge together, but also share diverse learning experiences from one another in order to express themselves and reflect on their learning.

ICTs offer more opportunities to develop critical higher order thinking skills. Based on a constructive learning approach, ICT helps students focus on higher-level concepts rather than less meaningful tasks (Levin and Wadmany, 2006). According to McMahon's, (2009) study showed that there were statistically significant correlations between studying with ICT and the acquisition of critical thinking skills. A longer exposure in the ICT environment can foster students' higher critical thinking skills. Thus, schools are strongly advised to integrate technology across all of the learning areas and among all learning levels. Where this is done, students are able to apply technology to the attainment of higher levels of cognition within specific learning contexts.

Producing a creative learning environment through utilisation. As Lowther, (2008), have stated that there are three important characteristics needed to develop good quality teaching and learning with ICTs; autonomy, capability, and creativity. Autonomy means that students take control of their learning through the use of ICTs. In this way, they become more capable of working by themselves and with others. Teachers can also authorise students to complete certain tasks with peers or in groups. Through collaborative learning with ICTs, the students have more opportunity to build the new knowledge onto their background knowledge, and become more confident to take risks and learn from their mistakes. Further, Serhan, (2009) concluded that ICTs fosters autonomy by allowing educators to create their own material, thus providing more control over course content than is possible in a traditional classroom setting. With regard to capability, once students are more confident in learning processes,

they can develop the capability to apply and transfer knowledge while using new technology with efficiency and effectiveness. For example, in an english as a second language class, students may be asked to practice their pronunciation using an online audio dictionary. They are required not only to listen to the native pronunciation from the dictionary, but also to learn the definitions and examples of a new vocabulary item. They then have to make a recording of their own pronunciation and provide examples of how this new word is used in context. Before completing this task, they have to know which browser to use in order to search for a suitable online audio dictionary. They will have to browse several online dictionaries, and select the one that best meets their learning needs. In addition, finding good software to record their voice is another prerequisite for these learners. Therefore, the whole learning process enriches students' learning skills and broadens their knowledge beyond what they already know. By using ICT, students 'creativity can be optimized. They may discover new multimedia tools and create materials in the styles readily available to them through games, CDs, and television. With a combination of students' autonomy, capability, and creativity, the use of ICTs can improve both teaching and learning quality (Gee, 2007).

The benefits of supporting teaching by facilitating access to course content. Watts-Taffe, (2003) found that teachers can act as catalysts for the integration of technology through ICTs. If the encouragement, equipment, and necessary technological support are available from institutes for the teachers, developing an ICTs class will be easier for them. The main responsibilities of these teachers will be changing their course format, creating and explaining the new assignments, and arranging for the computer lab through their technology learning specialists or assistants. In sum, as Reid, (2002) has indicated, ICT offers students more time to explore beyond theme chains of course content, allowing them to better understand concepts. The use of ICTs also changes the teaching and learning relationship. Based on the findings of Reid's study, teachers reported that the relationship between teacher and learner is sometimes reversed with regards to information technology. This relationship boosts students' confidence when they are able to help teachers with technical issues in the classroom. Therefore, ICTs changes the traditional teacher – centred approach, and requires teachers to be more creative in customising and adapting their own material. While ICTs is changing teaching and learning for the better in several ways, the existing literature has also identified some barriers. In the following sections, these barriers are classified into four categories based on the perspectives of students, teachers, administrators, and ICTs infrastructure. A variety of strategies for addressing these barriers is also discussed

2.6 Measures Put in Place to Increase ICTs

In order to analyse the measures literature on factors that influence use of ICTs was reviewed. Factors influencing the use of ICTs can be divided into external factors and internal factors. The two types of factors are related to each other and to ICTs usage level (Tezci, 2011). A variety of external factors have been identified that influence the progression or effectiveness of technology integration in schools. These include technology availability, accessibility of ICTs equipment, time to plan for instruction, technical and administrative support, school curriculum, school climate and culture and faculty teaching load and management routine (Al-Ruz and Khasawneh 2011; Lin, Wang and Lin 2012; Tezci, 2011).

Among these external factors, the most common are lack of access to computers and software, insufficient time for course planning and inadequate technical and administrative support (Chen,2008). Al-Ruz and Khasawneh, (2011) found that some external factors were positively associated with technology integration, including availability of technology and support from technicians, teachers, and principals. Thus, technology availability and overall support are important to technology integration. The higher the support structure and technology availability, the higher the technology integration efforts are made by teachers.

Several internal factors also influence technology integration outcomes (Sang, 2011). Internal factors related to teachers include: understanding of ICTs use; beliefs, which may conflict with the application of ICTs; attitudes towards technology integration; perceptions, including intention or motivation to use ICTs; self-confidence and knowledge; technology skills; readiness to use ICTs; and technology self-efficacy (Al-Ruz and Khasawneh, 2011; Chen, 2008; Lin, Wang and Lin 2012; Sang,2011; Tezci, 2011). Chen, (2008) discovered two common issues associated with internal factors. First, teachers may implement policies based on limited or improper theoretical interpretations and comprehension of ICTs use. Second, teachers may be under pressure to cover all content and be unwilling or hesitant to let students spend more time exploring content on their own with technology due to their other conflicting beliefs. These issues simply state that teacher beliefs may not resonate in their practices. A school culture emphasising competition and a high stakes assessment system can discourage teachers from integrating technology into their classrooms. Thus, teacher beliefs influence ICTs use in the classroom (Chen, 2008).

According to Yusuf, (2006) despite the fact that Nigeria and in fact most African countries came late into the ICTs world, the adoption of the Nigerian policy for information technology in 2001 is the right step in ICTs application in every sector of the nation's life and in particular in education. The policy is designed to ensure that Nigeria as a nation recognizes the strategic importance of ICTs for national development. Successful application in every sector can only be assured through adequate coverage of needed areas. Identified gaps can be filled through the environment of important stakeholders/actors such as the teacher and managers of education. Specifically, Kwacha, (2007) indicated the following are some required urgent steps towards the adoption and use of ICTs in education: The adoption of ICTs international standards and its inclusion in the Nigeria curriculum and in particular in the teacher's education curriculum. Continuous and provide training of teachers on computers and ICT skill acquisition; Development and training of ICT experts, specifically for instruction design and development, who will work in partnership with educators and teachers; Funding: Government at all levels should make ICTs a matter of priority; improve the funds specifically needed for the training of teachers/students in computer education who will be equipped with ICTs knowledge and skills and lastly there is need for the Nigerian government to address seriously the issues of the erratic electricity power supply.

2.7 Challenges to Utilisation of ICTs in Distance Education

Despite the keenness by institutions of higher learning to establish distance education programmes, they are confronted with enormous problems that may have impeded its proper implementation. The most significant of these problems is poor ICT penetration and usage among Zambian distance education practitioners. Almost all African countries' basic ICTs infrastructures are inadequate; this is as a result of lack of electricity to power the ICTs materials, poor telecommunication facilities, and a poor postal system. Above all the lack of access to the needed infrastructures is due to insufficient funds.

According to Yusuf, (2006) successful distance education cannot be assured without the use of effective communication and technological tools (e-mail, fax, internet, television, radio, etc.). Several cities and rural areas in Zambia are yet to have or have fluctuation in the supply of electricity. Additionally, most Zambians do not have access to telephone and other telecommunication facilities. Even telephone lines in the urban centers are not adequate to

serve the teeming population. Services for those who have access are in most cases epileptic. These may make the integration of telecommunication in the delivery of distance education difficult. For example, in a ten - African country survey, Botswana has the highest fixed line house hold penetration at 22.4 per cent, followed closely by South Africa at 22.1 per cent. Zambia is next at 18.6 per cent, with Nambia at 14 per cent. Tanzania has a fixed line penetration of 6.1 per cent, Ethiopia just over 5 per cent and Rwanda 4.4 per cent. Uganda trails far behind the rest, with penetration under 1 per cent (Gillwald and Esselaar, 2005). Basically, African countries tend not to have the same infrastructural facilities and support as the developed West, which are prerequisites for the new order (Ifinedo, 2005). In addition, the poor state of telephone service has led to increases in dial-up cost for most Zambians. Poor economic situations and their effects on middle level manpower, stand as the major obstacle towards the implementation of ICTs in distance education. Even an average middle income earner cannot afford basic technological and communication gadgets. Thus, computer - related telecommunication facilities might not be useful for most Zambians, as computers are still a luxury in institutions, offices and homes. This has made the integration of necessary online resources (e-mail, newsgroups and world-wide-web) into distance education in Zambia most difficult (Chifwepa, 2006).

Nwagwu and Ahanihe, (2006) efforts to improve ICT access in Africa have been hampered by a number of factors; these are summarised as follows:

> • *prospective ICT users that have the expertise, competence and equipment to benefit from access to electronic information networks are minute in number;*
> • *shortage and high cost of equipment, software and information compared to situations*
> *in industrialized nations;*
> • *lack of reliable and accessible physical telecommunications infrastructure; telecommunications monopoly, associated with overly restrictive regulations and high*
> *costs, and*
> • *lack of interregional networking and cooperation amongst national universities and international institutions.*

In the same vein, Commonwealth of Learning International, (2001) made it clear that essential services and infrastructure like electricity, telecommunications and postal services must be developed to levels that could support the declared scale of open and distance education in order to increase administrative networks and develop a proper link between faculty and students Another most serious challenge facing distance education at this level in Zambia is the need for the integration of new ICT literacy knowledge into academic courses and programs.

According to Pelgrum, (2001), obstacles for ICT implementation include the following: Insufficient number of computers, teachers' lack of ICT knowledge/skills, difficult to integrate ICT to instruction, scheduling computer time, insufficient peripherals, not enough copies of software, insufficient teacher time, not enough simultaneous access, not enough supervision staff and lack of technical assistance. Similarly, Azuh, (2013) noted the barriers also to include limited equipment, inadequate skills, minimal support, time constraints and the teacher's own lack of interest or knowledge about computer. Kwacha, (2007) also noted that the most common problems associated with the effective implementation of ICT are lack of qualified ICT personnel, cost of equipment, management attitudes, inconsistent electric power supply, inadequate telephone lines, particularly in rural areas and non-inclusion of ICT programmes in teacher's training curricula and at the basic levels of education.

The most obvious obstacle to use of ICT remains access to higher bandwidth. Even in countries like South Africa and Egypt, which have relatively high ICT capacities, internet bandwidth education institutions is very congested. A survey by Jensen, (2002) revealed that almost 60 percent of African countries have bandwidth that is less than that typical institution in the developed world. In Africa, insufficient private sector investments in the telecommunications infrastructure and the lack of competition has led to arbitrary pricing-setting that has set the cost of ICT beyond the reach of most education providers. Providing universal access to higher education is costly and complex. The need to create robust bandwidth capabilities throughout Africa exposes the various constraints that need to be addressed at the institutional, national, and regional levels. In Africa, particular emphasis needs to be placed on under-serviced areas, where telecommunications infrastructure is weak or non-existence. While an open and competitive market will ensure that infrastructure will generally develop in high density areas, policy intervention will be required to ensure that

under-serviced areas receive infrastructure investment and remote schools also get connected to a telecommunications network.

2.8 Summary of Chapter two

This section summarises the many issues arising from the literature review. The study reviewed literature on the levels of knowledge, access to ICT resources, utilisation of information communication technologies by students. The literature also looked at the categories of ICT technologies, capturing technologies, storage technologies, communication technologies and display technologies. The study explored literature on utilisation of ICTs by academics, benefits of utilizing ICTs in distance education, measures put in place to increase ICTs and challenges of ICTs in distance education students.

CHAPTER THREE: METHODOLOGY

3.0 Overview

This chapter presents the methodology which the study used to carry out the research. It has been divided into the following subsections: the first section describes the design, pilot study, population, sample and sampling procedures and the research instruments; the last section comprises data collection methods and analysis of data.

3.1 Research Design

This study used a descriptive survey. Frequencies and percentages have been used to show responses to certain variables. The study employed descriptive and survey research designs. A research design was thought of as the structure of the research and defined as the scheme outline used to generate answers to research problems (Orondho, 2003). It situates the researchers in the empirical world by connecting them to specific sites, persons, institutions and bodies of relevant interpretive material and documents. It further lays down conditions for the collection and analysis of data. Best, (2007) observes that the descriptive survey method enables a researcher to obtain the opinion of the representative sample of the target population so as to be able to uncover the utilisation of the entire population. In assessing utilisation of ICT in distance education amongst students and lecturers, a descriptive survey was a suitable research design. The survey design was chosen because it solicites information on the availability of ICT infrastructure and utilisation. The major type of information that was collected was descriptive. According to Nachimias and Nachimias, (1981) survey research is the best for this type of information.

3.2 The Population

The population of the study consisted of 4000 distance students enrolled at different schools in the Institute of Distance Education of the University of Zambia and 59 lecturers teaching under distance education at the University of Zambia. Because the total number of lecturers was considered to be small, this study targeted all of them. The study took place at the University of Zambia Great east campus in December 2013 during the Residential School.

3.3 Study Sample

According Kombo and Tromp, (2006) a sample is a small proportion of the selected population for observation and analysis. By observing the characteristics of a sample, which is diverse, representative, accessible and knowledgeable in a study area, findings can be

generalised. In principle, the larger the sample, the more representative it is likely to be and more generalised the results of the findings will be to the target population.

On the part of the lecturers the study targeted all the 56 lecturers but only managed to administer to 26 lecturers. Most of the lectures when approached indicated that they were busy and had too many scripts to mark. The target for the students was 200 students but only 121 students were covered, as some indicated that they were busy doing assignments and preparing for tests, while some who agreed to answer at their own time were never found in the rooms at the time of collection.

3.4 Sampling Procedures

Sampling procedure refers to the part of the study that indicates how respondents were selected to be part of the sample. Samples are not selected haphazardly but are chosen systematically. Purposive sampling and simple random sampling were used in this study. According to Kombo and Tromp, (2006) purposive sampling targets only the people believed to be reliable for the study. It is equally applicable in qualitative studies. The preference in purposive sampling was biased towards the lecturers and the Institute of Distance Education members of staff.

In selecting the students, hostels were divided into two sets of male and female blocks apart from the vet hostels which were occupied by full time students. Then from each set of blocks, simple random sampling was used to come up with a number of hostels to be sampled from the hostels, rooms were also randomly selected by skipping four rooms to administer to the next one.

The study purposively sampled all the lecturers. The study was unable to cover all the lecturers because some indicated that they were busy and had no time to answer questionnaires and this prompted the author to leave the questionnaires with the lecturers and then collect them later. Some refused totally to answer the questionnaire. The study ended up covering only 26 lecturers out of 59.

As for the key members of staff at the Institute of Distance Education, the study also purposively sampled the director, coordinator and the student support officer.

3.5 Research Instruments

In order to collect information from students, lecturers and members of staff, questionnaires and interview guides were used.

3.5.1 Questionnaires

Questionnaires were administered to lecturers and distance students. Questionnaires are reliable data collecting instruments when collecting data over a large sample. They equally saved time, especially that time was a limiting factor in this research.

The use of questionnaires was arrived at because it helps to create a rapport between the researcher and the respondents, by explaining the purpose of the study. In addition, the availability of many respondents at a time made it possible for the researcher to collect data within a short period, get a high response rate and also reduce the financial expenses. In fact, the use of a questionnaire was chosen since studies by Bowling, (1997) revealed that as an instrument for data collection, a questionnaire used in a survey increased the external validity of the study done in natural settings. The questionnaires were administered to lecturers and students.

3.6 Data Collection Procedure

Entry into the field for data collection was facilitated with a letter of introduction from the Department of Adult Education. This letter was taken to the Director of the Institute of Distance Education who responded and allowed the research to go on. The data collection was done when students came for residential school in December 2012. A place which in most instances was an office acted as a venue for the interviews and answering the questionnaires for the lecturers and IDE members of staff. The questionnaire for students was administered in their various rooms where they were allocated to stay during their residential school. The challenges the researcher faced included refusal to participate in the study by some respondents and waiting for a longtime to interview or administer the questionnaire because some of the respondents had been out for class that is both lecturers and students.

Two types of data collection instruments were used and these were the survey questionnaire and semi-structured interview guide. The researcher created interview questions prior to the first interview, he made sure that the questions were in line with the topic and the literature on the topic. Semi-structured interview schedules were utilised to collect data from the Institute of Distance Education members of staff. Lecturers and students were subjected to

the questionnaire. In most instances, for both lecturers and students the researcher was not around when the questionnaire was being answered because the respondents wanted to answer to answer at their own time. This led to some of the questionnaires getting lost

Regarding interviews, the researcher conducted them in an office. Each interview lasted for about 30 to 45 minutes.

3.7 Data Analysis

Data was analysed in this manner; Qualitative data employed content analysis and generation of themes; Quantitative data employed simple quantitative analysis techniques such as: the generation of frequency tables, cumulative percentages and graphs.

The responses from research respondents were put into categories according to the emerging themes and then analysed and interpreted critically and objectively in order enable the researcher go beyond the information given from the gathered data and then draw conclusions that are vivid, valid and reliable.

3.8 The Pilot Study

A pilot study was carried out targeting students who were based in Lusaka as well as lecturers at the University of Zambia teaching under distance education.

The pilot study was undertaken to ensure that items included in the questionnaire were well understood and interpreted by the respondents and to establish the most reliable and suitable way to administer the study instruments to ensure maximum return. On the basis of the responses from the pilot study, the items in the questionnaire were rated, and it was found that the respondents had easily understood the contents.

3.9 Limitations of the Study

Limitations identify potential weakness of the study. These include whether the findings could be generalised to the entire population or not and geographical restrictions that prejudice the autonomy of the study, data inaccessibility and unexpected occurrences (Kombo and Tromp, 2006).

This study experienced limitations; some lecturers indicated that they were very busy hence refused to answer the questionnaire; some students were not found in their rooms at the time of collection of the questionnaire; the period of data collection for students was limited to one

month during the residential school and it was observed by the researcher that not so much research had been done in Zambia on Utilisation of information communication technology in distance education. Due to these limitations the researcher was unable to cover a lot of students.

3.10 Ethical Considerations

May (1993) advocates that professional code of ethics be concerned with issues such as academic honesty, adherence to confidentially, data privacy, impartiality in data analysis, professional consultation and professional accountability. These issues were taken care of in this study by adhering to the University of Zambia research ethics and obtaining an introductory letter from the Department of Adult Education and Extension studies to authorise the research to be undertaken in the designated area.

In this study, therefore, the researcher obtained a verbal informed consent from each participant. The participants were informed that participation in the study would be on the basis of informed consent, and on a voluntary basis, with rights to withdraw at any time. Participants were further informed that the research was purely for academic purpose as it was a fundamental requirement for the award of a Master of Education in Adult Education. The research further assured the participants that their responses would be confidential and that their identities would remain anonymous.

3.11 Summary of Chapter Three

This chapter looked at the research design, population, study sample, sampling procedure, research instruments, data collection procedure, data analysis, the pilot study, limitations of the study and ethical consideration of the research.

CHAPTER FOUR: PRESENTATION OF THE FINDINGS

4.0 Introduction

This chapter presents the findings of the study on the utilisation of Information and Communication Technologies in distance education at the University of Zambia. The findings were based on the following research questions:

1. What were the levels of knowledge in ICTs from the lecturers and students?
2. What was the extent of distance learners access to learning materials through ICTs?
3. What were the commonly utilized ICTs by Students and Lecturers?
4. What measures did the University of Zambia Institute Distance Education put in place to increase ICTs Utilisation?
5. What were the main Challenges faced in integrating ICTs in the delivery of the curriculum content?

4.1 Levels of Knowledge in ICTs among Lecturers and Students

Information on levels of knowledge in Information and Communication Technologies was sought because it was perceived as being one of the determinants of utilisation of ICTs by the lecturers and students. It was therefore important to find out the levels of knowledge by the two groups. Information on levels of knowledge for the students was measured using the following students' awareness on ICTs use of digital camera, students' inserting photos in assignments and presentations, and awareness on using search engines. Lecturers' levels of knowledge in Information and Communication Technology were measured against the ability to type their own work, ability to use internet without help, and lecturer's awareness on using search engines. From the findings, it was conclusive that most lecturers and students were aware about ICTs.

The respondents were asked if they knew what ICT is. This was asked in order to establish awareness of ICTs It was established that most of the students indicated that they knew what ICTs was and indicated what the letters stood for Information Communication Technologies. Out of 121 students 93 students or 76.9 percent knew what ICT meant while 28 or 23.1 per cent of students said they didn't know what Information Communication meant. An open ended follow-up question was asked to students (93 or 76.9 per cent) who knew what ICTs meant. Students were asked to briefly explain what ICTs was about. Most of them just indicated the acronym for ICTs which was information and communication technology.

Those students who knew were able to cite at least five gadgets used in information and communication technology such as projector head, computers and phones.

Table 1: Distribution of Students' Awareness Levels of ICTs

Awareness of ICT	**Frequency**	**Percentage**
Students aware of ICT	93	76.9
Students not aware of ICT	28	23.1
Total	**121**	**100**

The students were asked to indicate if they could use a digital camera. This question was asked in order to help to identify usage of ICT gadgets by the students. It also gave an insight if these gadgets really helped them in doing their work. A camera can be utilised by students to include photos in their assignments and research to help them explain and make better presentation.

It was established that out 121 students, 65 students or 53.7 per cent indicated that they used a digital camera while 56 students or 46.3 per cent could not use a digital camera.

Table 2: Students' use of Digital Camera

Ability to use digital camera	**Frequency**	**Percentage**
Those who could use	65	53.7
Those who could not	56	46.3
Total	**121**	**100**

A follow-up question was asked to the respondents if they were able to include photos in their assignments and presentations. It was found that most students were unable to include photos in their assignment which could be attributed to the fact that some did not have the cameras' or they just did not know how to go about it.

The majority of the students responded that they could not insert photos in their assignments and presentations. Out of the 121 students, 81 students or 66.9 per cent were not able to insert

photos in assignments and presentations while 40 students 33.1 per cent stated that they could include photos in their work.

Table 3: Students Inserting Photos in Assignments and Presentations

Ability to insert photos	**Frequency**	**Percentage**
Able to insert	40	33.1
Not able to insert	81	66.9
Total	**121**	**100**

Ability to type work was one way of showing if one was able to type his or her own work; lecturers were asked if they could type their own work. The majority of the lecturers indicated that they were able to type their work, 19 were able to type their own work while 7 were not able to type their own work on laptops or computers.

Table 4: Lecturers' Ability to Type their Work

Ability to type work	**Frequency**
Able to type	19
Not able to type	7
Total	**26**

Lecturers were asked to indicate if they could use internet without help. Internet is an important tool for research; lecturers can make good use of the internet by researching on topics they want to teach on as well as for communication through email. It was very cardinal to know the usage of internet without any help as far as the lecturers were concerned. Out of 26 lecturers, 15 indicated that they could use internet without anyone helping them and 11 indicated that they needed help for them to really access information on the internet

Table 5: Lecturers Ability to use Internet without Help

Ability to use internet without help	**Frequency**
Able to use	15
Not able to use	11
Total	**26**

Lecturers were also asked to indicate how ICTs made their work easier. Lecturers acknowledged that ICTs had made their work easier in various ways. The following were the most mentioned; research, facilitating easy teaching, no time wastage on using material such as paper and chalk when teaching; making communication easier and faster.

Internet is one important tool in distance education especially that the students can use it for research. Students were asked to indicate how internet could be used in learning. The study revealed that the majority of the students knew how to use the internet as a source of learning. Those who said internet could be used as a source of learning represented 73.6 per cent while those who did not know how internet could be used as a source of learning represented 26.4 per cent.

The study revealed that for both lecturers and students the most popular search engine was Google search. Out of 121 students 96 or 79.3 per cent knew Google search while 19 or 73.1 percent for lecturers, Yahoo 72 or 59.5 per cent for students and 11 or 42.3 per cent for lecturers. The most unpopular for both respondents was Bing 22 or 18.2 per cent for students and 8 or 30.8 percent for lecturers. Ask .com was known more by lecturers than students, 9 or 34.6 per cent for lecturers' and 27 or 22.3 per cent for students.

Table 6: Distribution of Lecturers and Students' Awareness on using Search Engine

Search Engine	**Students**		**Lecturers**
	Number of students	**Percentage**	**Number of lecturers**
Yahoo	72 out of 121	59.5	11 out of 26
Google search	96 out of 121	79.3	19 out of 26
Bing	22 out of 121	18.2	8 out of 26
Ask .com	27 out of 121	22.3	9 out of 26

The table below shows lecturers and students ability to use search engines without help. The majority of students could use the search engines without help. Out of 121 students 82 or 67.8 per cent could use the search engine without help, while 39 or 32.2 students needed help. Out of 26 lecturers, 9 lecturers could use the search engine without help, while 17 needed help to

use the search engines. In summary, this study found that awareness among lecturers and students was high but knowledge related to some computer applications was low.

Table 7: Lecturers and Students Ability to use Search Engines without Help.

Lecturers and students ability to use search engines	Students		Lecturers
	Number of students	**Percentage**	**Number of Lecturers**
Using without help	82	67.8	9
Needs help to use	39	32.2	17
Total	**121**	**100**	**26**

4.2 Distance Learners Access to Learning Materials through Information and Communication Technologies

ICTs enable fast communication in various ways for example, communicating through emails, phones and presentation through power point. The students were asked to state the modes which they preferred access lectures from. The responses are presented in table 8 below

The table below shows the distribution of modes by which students preferred to access lessons. The findings of the study discovered that most of the students did not access lectures through these modes about 3 or 2.5 per cent of students accessed online lecturers from podcast, 4 or 3.3 per cent from radio, 5 or 4.1 per cent from video conference, 4 or 3.3 per cent from digital video decoder (DVD), 4 or 3.3 per cent telephone, 9 or 7.4 per cent from television, 8 or 6.6 per cent from audio tapes and those who accessed from audio compact (CD) 15 or 12.4 per cent.

Table 8: Distribution of Modes by which Students Preferred to Access Lessons

Mode	Number of students	Percentage
Podcast	3 out of 121	2.5
Radio	4 out of 121	3.3
Video conference	5 out of 121	4.1
Digital video decoder (DVD)	4 out of 121	3.3
Telephone	4 out of 121	3.3
TV (Television)	9 out of 121	7.4
Audio apes	8 out of 121	6.6
Audio compact discs	15 out of 121	12.4

The students were asked a follow-up question to choose four modes they would like to receive learning materials through amongst podcast, radio, and video conferencing, digital video decoder, telephone, television and audio tapes. The majority of the students picked on digital video decoder (DVD), audio compact discs, audio tapes and very few picked on video conference, telephone and television.

Lecturers were also asked if they provided lectures in the following modes; podcast, radio, video conference, DVD, telephone, TV, audio tapes, and CD. The study established that none of the lecturers provided lectures in the above mentioned modes. A fellow-up question was asked to choose ways in which lecturers preferred to lecture. The majority of the lecturers mentioned DVD, CD, audio tapes and video conference.

Accessing modules on the internet was seen as one of the ways students could access reading materials and it was also faster. Students were asked if they were able to download modules from the internet. They responded that they had never down loaded modules from the internet, the only thing they accessed online were the assignments, which they were able to download and they were also able to read various announcements and exam time table as well. Access to learning materials through ICTs is very important in the sense that it enhances quick communication between the students and the Institute Distance Education. From the findings, it was conclusive that the students accessed some information online, such as assignments and various announcements on the University of Zambia website.

4.3 The Commonly Utilised Information and Communication Technologies

This section aimed at finding out the most commonly utilised information communication technologies**.** The first question here dealt with utilisation of email for communication purposes responses to that question are presented in table 9 below.

It was noted from the study that the majority of lecturers' never used email to communicate with the students. 19 never used email to communicate with students, only 7 used email to communicate with them. Communication between the lecturers and students is very important in distance education. In Table 10 below lecturers were asked how often they communicated with students.

Table 9: Lecturers' Communication with Students' using Email

Communicating with students using email	**Frequency**
Used email	7
Never used email	19
Total	**26**

The Table below shows how often lecturers communicated with students using email. It was noted from the study that 19 of lecturers never communicated by email, those who communicated once a month represented 1, 4 communicated by email three times in a month and those who communicated when it was necessary 2. Lecturers were asked to indicate if they sent assignments to students by

Table 10: Distribution of how often Lecturers Communicated with the Students using Email

Responses	**Frequency**
Once a month	1
Three times in a month	4
Never	19
When necessary	2
Total	**26**

Table 11 below shows lecturers who sent assignments to students through email.Out of the 26 lecturers 0nly 1 sent an assignment to students via email while 25 had never sent emails to students. In Table 12 below, students were asked to indicate their preferred ways of receiving information

Table 11: Distribution of Lecturers who Sent Assignments to Students by Email

Sending assignments using email	**Frequency**
Sent by email	1
Never sent by email	25
Total	**26**

Table 12 below shows students preferred ways of receiving information. The most preferred way of receiving information was Email. Out of 121 students 92 or 76 per cent preferred email followed by posted mail 91 or75.1 per cent, fax 87 or 71.9 percent, 33 or 27.3 per cent indicated radio, 47 or 38.8 per cent TV and as for regional centre by phone, students indicated 42 or 34.7 per cent.

Table 12: Students Preferred Ways of Receiving Information

Preferred Mode	**Frequency**	**Percentage**
Posted mail	91 4 out of 121	75.1
By fax	87 out of 121	71.9
By radio	33 out of 121	27.3
By TV	47 out of 121	38.8
Regional centre by phone	42 out of 121	34.7
Email	92 out of 121	76

At the time of the study, the commonly used mode of communicating information to students by the Institute of Distance Education was broadcasting through radio and television. This study noted that broadcasting was not a preferred way of receiving information by students.

Lecturers and students were asked which social networks they belonged to. Results are shown in table 13 below Face-book was the most popular social network among lecturers and students. Lecturers who belonged to face-book represented 17, twitter 6, my space 3 and Hi5 1. The students on face-book were 32 or 26.4 per cent, twitter 6 or 5 per cent, my space 9 or 7.4 per cent and Hi5 4 or 3.3 per cent.

Table 13: Social Networks Lecturers and Students belong to

Social network	**Students**		**Lecturers**
	Frequency	**Percentage**	**Frequency**
Face book	32 out of 121	26.4	17 out 26
Twitter	6 out of 121	5	6 out of 26
My space	9 out of 121	7.4	3 out 26
Hi5	4 out of 121	3.3	1 out of 26

Ownership of ICTs Gadgets and Self-Rated Skills in Information and Communication Technologies

In order to provide a context for utilisation three issues that influence utilisation were explored: students' ownership of ICT gadgets; respondents' self-rated skills in ICTs, and respondents' training needs in ICTs. Table 14 below shows the distribution of ICT gadgets the students own.

ICT comprises different gadgets which can help students in various ways. Students were asked to indicate which gadgets they owned. The study revealed that majority of the students owned computers. Those who owned computers represented 62 or 51 per cent while those who did not have represented 58 or 49 per cent. 101 or 83.5 per cent had television sets, and 67 or 55.3 per cent had a telephone, 42 or 34.7 per cent had a modem, 72 or 59.5 per cent had a radio, 23 or 19 per cent had printers and 8 or 6.7 per cent had podcasts. Overall the majority of the students owned the basic gadgets.

Table 14: Distribution of ICT Gadgets Students Own

Item	Frequency	Percentage
Computer	62 out of 121	51
Podcast	8 out of 121	6.7
Printer	23 out of 121	19
Internet connection at home	19 out of 121	15.7
DVD	69 out of 121	57.7
Telephone	67 out of 121	55.3
TV	101 out of 121	83.5
Radio caste recorder	72 out of 121	59.5
Modem	42 out of 121	34.7

Self-Rated Skills in ICTs

This section aimed at finding out the levels of skills the lecturers and students had in Portable Document Format (PDF), Excel, Word, Power Point, Publisher, SPSS, drawing and making tables. Students and lecturers were asked to rate themselves in terms of skills in using PDF

Table 15 below shows distribution of students and lecturers self-rated skills in using PDF. The study revealed that the majority of the students were poor in using PDF, 32 or 26.4 per cent indicated that they were very poor, 31 or 25.6 per cent indicated that they were poor, 27 or 22.3 per cent indicated that they were average, 20 or 16.5 per cent indicated that they were good while 11 or 9.1 per cent indicated that they were very good. For the lecturers the skills were equally poor,7 indicated that they were very poor, 8 indicated that they were poor, 5 indicated that they were average, 1 indicated that they were good while 5 indicated that they were very good.

Table 15: Distribution of Students and Lecturers Self-Rated skills in using PDF

Students			Lecturers	
Responses	**Frequency**	**Percentage**	**Responses**	**Frequency**
Very good	11	9.1	Very Good	5
Good	20	16.5	Good	1
Average	27	22.3	Average	5
Poor	31	25.6	Poor	8
Very poor	32	26.4	Very poor	7
Total	**121**	**100**	**Total**	**26**

The students and lecturers were asked to rate the skills in terms of using Excel, Table 16 below shows the students and lecturers self-rated skills in Excel.

The study discovered that most of students were poor in using Excel, 33 or 27.3 per cent indicated that they were very poor, 21 or 17.4 per cent indicated that they were poor, 32 or 26.4 per cent indicated that they were average, 18 or 14.9 per cent indicated that they were good while 17 or 14 per cent indicated that they were very good. The majority of the lecturers indicated that they were poor representing 7. saying they were average were 7 and poor 12 were poor.

Table 16: Distribution of Students and Lecturers Self-rated Skills in Excel

Students			Lecturers
Response	**Frequency**	**Percentage**	**Frequency**
Very Good	17	14.	
Good	18	14.9	
Average	32	26.4	7
Poor	21	17.4	12
Very poor	33	27.3	7
Total	**121**	**100**	**26**

Table 17 below shows the distribution of students and lecturers self-rated skills in using Microsoft Word. The findings were that most of the lecturers were very good with Microsoft

Word 17 were very good, while 24 or 19.8 per cent for students were very good, 2 for lecturers were good, while 7 or 26.9 per cent were very poor. Majority of the students were average which represented 37 or 30.6 per cent, 34 or 28.1 per cent of the students were good, these who said they were poor scored 10 or 8.3 per cent and lastly those who were very poor scored 16 or 13.2 per cent.

Table 17: Distribution of Students and Lecturers Self-Rated Skills in using Microsoft Word

Students			**Lecturers**
Responses	**Frequency**	**Percentage**	**Frequency**
Very Good	24	19.8	17
Good	34	28.1	2
Average	37	30.6	
Poor	10	8.3	
Very poor	16	13.2	7
Total	**121**	**100**	**26**

Table 18 below shows distribution of students and lecturers self-rated skills in using power point. Most of lecturers and students were poor at power point. The students scored the following ratings on power point very good 14 or 11.6 per cent; good 16 or 13.2 per cent, average 33 or 27.3 per cent, poor 27 or 22.3 per cent and very poor 31 or 25.6 per cent. Most of the lecturers were average when it came to using power point, those who were very poor were 7, very good were 6 while 5 lecturers were good and 8 were average. Power point could be used by students when making class presentations in class during residential school.

Table 18: Distribution of Students and Lecturers Self-rated Skills in using Power Point

Responses	**Students**		**Lecturers**
	Frequency	**Percentage**	**Frequency**
Very good	14	11.6	6
Good	16	13.2	5
Average	33	27.3	8
Poor	27	22.3	
Very poor	31	25.6	7
Total	**121**	**100**	**26**

Table 19 below shows the distribution of students and lecturers self-rated skills in using Publisher. The skills in using Publisher for both lecturers and students were very poor; publisher can be used by lecturers and students publishing various academic papers. The lecturers who were very good at Publisher represented 1, good 5, average 1 and those who said they were very poor represented 19. The students represented the following very poor 38 or 31.4 per cent, poor 37 or 30.6 per cent, average 31 or 25.6 per cent, good 11 or 9.1 per cent and lastly very good 4 or 3.3 per cent.

Table 19: Distribution of Students and Lecturers Self-Rated Skills in using Publisher

Responses	**Students**		**Lecturers**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Very good	4	3.3	1	3.8
Good	11	9.1	5	3.8
Average	31	25.6	1	3.8
Poor	37	30.6		
Very poor	38	31.4	19	73.1
Total	**121**	**100**	**26**	**100**

Table 20 below shows the distribution of students and lecturers self-rated skills in using Scientific Package for Social Sciences (SPSS). Statistical package for social sciences SPSS is another skill which the students and lecturers were asked to rate themselves in. SPSS could be used by both lecturers and students to analyse data from various researches. The majority of students and lecturers were not equipped in this skill. The following are the ratings from the lecturers very good 1, good 8, average 2, poor 7 and very poor 8. The students indicated the following ratings for very good 2 or 1.7 per cent, good 5 or 4.1 per cent, average 18 or 14.9 per cent, poor 46 or 38.0 per cent and lastly, very poor 50 or 41.3 per cent.

Table 20: Distribution of Students and Lecturers Self-rated Skills in using SPSS

Responses	**Students**		**Lecturers**
	Frequency	**Percentage**	**Frequency**
Very good	2	1.7	1
Good	4	4.1	8
Average	18	14.9	2
Poor	46	38	7
Very poor	50	41.3	8
Total	**121**	**100**	**26**

Drawings and making tables is another skill required to make various presentations in an orderly manner. The students and lecturers were asked to rate themselves in this skill. The popular performance for both lecturers and students was below average. The students responded as follows very good 13 or 10.7 per cent, good 16 or 13.2 per cent, average 26 or 21.5 per cent, poor 26 or 21.5 per cent and very poor 40 or 31.1 per cent. The majority of the lecturers were average, 9 followed by very poor which represented 8. The rest of the ratings for lecturers were as follows, 7 were very good, and lastly good 2.

In summary, lecturers rated highly in Microsoft Word and PowerPoint and lowly PDF, Excel, Publisher, SPSS and drawing and making tables. Students rated themselves highly in Microsoft Word and lowly in Power Point, PDF, Excel, Publisher, SPSS, and drawing and making tables.

Training Needs in ICTs

This section aimed to find out if the respondents had done formal training in information and communication technology, and what programmes they would like to be trained in. Table 22 below shows students and lecturers who did formal training in ICTs.

Table 21 below shows students and Lecturers who did formal training in ICTs. The study revealed that majority of the students and lecturers had never done any form of ICT training. Out of 121 students, 39 or 32.1 per cent of students indicated that they had done some form of training while 3 of lecturers said they had done some training, 82 or 67.9 percent of students mentioned that they had not done any training while 23 of lecturers never did formal training.

Table 21: Students and Lecturers who did Formal Training in ICTs

Students			**Lecturers**	
ICT Formal Training	**Number of students**	**Percentage**	**Responses**	**Number of students**
Did formal Training	39	32.1	Did formal training	3
No Formal Training	82	67.9	No formal training	23
Total	**121**	**100**	**Total**	**Total**

The students and lecturers were asked a question to find out which programmes they would like to be trained in among those they were asked to rate themselves in, which were PDF, Microsoft Word, Excel, PowerPoint, Publisher, SPSS and drawing diagrams and making tables. The students chose SPSS followed by PowerPoint then Excel, Publisher and drawing diagrams and making tables. The lecturers choose power point followed by SPSS then Excel, Publisher, Microsoft Word and lastly drawing and making tables.

In summary, both lecturers and students never did formal training and expressed interest in learning all the programmes mentioned above. From the findings it has also shown that utilization of ICTs by both lecturers and students was low. Email was not utilized much between the students and the lecturers. The study also revealed that the majority of lecturers and students belonged to social network face-book. The majority of students had basic ICTs

gadgets. Both lecturers' and students did not perform well in the self-rated skills apart from Microsoft Word.

4.4 University of Zambia Institute of Distance Education Measures Aimed at Increasing Information and Communication Technologies Utilisation

New state-of-the-art servers have been purchased and installed at the Centre for Information and Communication Technologies (CICT). The introduction of the University website, introduction of wireless at the University premises and email addresses have been developed for all distance education students. At this stage, solid foundation has been laid in infrastructure development. The focus for CICT therefore has shifted to value additions on the infrastructure that has been laid.

Members of staff from the Institute of Distance Education made mention that the institute introduced email addresses for all the distance education students. This was put in place in the effort to improve fast communication and feedback on various issues. IDE had plans to expand usage of ICT. The plans were contained in the VLIR-UNZA-ICU project that was developing the internet-based electronic student and records management system. There were also plans to produce audio study materials through cooperation with UNZA radio. The interview also revealed that computers had been acquired and installed in the various units of IDE including the provincial centres in the country. The University of Zambia IDE was in the process of building computer laboratories in all the provincial capitals, with the first being at the Copperbelt University in Kitwe on the Copperbelt.

> *"One of the members of staff indicated that Institute of Distance Education introduced the downloading of assignments questions from the university of Zambia website. Among other information they were providing on the web site is examination time-tables, residential dates and various information on linking with students. The Institute of Distance Education management was using public, private and community media fraternity in the dissemination of information to distance education students".*

IDE used computers in the production of course materials and it also provided lecturers with some training in the use of ICTs.

It was established that the University of Zambia in particular IDE had plans to expand ICT utilisation. Some measures put in place were introduction of email addresses for each student, posting of assignments on the University website and IDE also utilised the radio and television to communicate with the students.

4.5 Challenges for Utilisation of Information and Communication Technologies Distance Education

This section aimed at finding out the challenges faced by the lecturers, students and the Institute of Distance Education. It also looked into suggestions which would improve utilisation of ICTs at the University of Zambia.

A question was asked to the students to give any suggestions for improving utilization of ICTs in distance education at the University of Zambia. The students gave the following suggestions, that learning materials should be accessed through downloading from the internet or given in a soft form copy. They also suggested the use of email and introduction of ICT as a course, compulsory at first year but not examinable. Lecturers were asked to indicate what problems they faced in trying to use ICT. Lecturers complained that the internet was slow; they also mentioned that facilities such as project heads were not enough, some went even further to say that they did not have computers in their offices. Lecturers were asked to give suggestions on improving utilisation of ICTs in distance education at the University of Zambia, one of the lecturers mentioned:

> *"students should be trained in ICT and encouraged to access and utilise programmes so as to widen their knowledge base, and also encourage communication between students and lecturers by email and phone so as to sort out problems as they came across them and not necessarily wait for residential school; Improve internet connectivity; upload materials for students to access".*

Some lecturers also indicated that there was need for more investment in ICT infrastructure and purchase more necessary ICT gadgets and equipment to ensure availability and access for all. Capacity building in all potential user of ICT is also needed.

There are many challenges attributed to integrating of ICT in the delivery of the curriculum content in Zambia. Out of 121 students 48 or 39.7 per cent strongly agreed followed by 32 or

26.4 per cent students who also agreed, 13 or 10.7 per cent were neutral, 23 or 19 per cent disagreed and 5 or 4.1 per cent strongly disagreed.

The University laboratories were not accessed by most students during the residential school according to the study, 29 or 24 per cent of the students indicated that they had access to the laboratories while 92 or 76 per cent never had access to the facilities. Most of the students agreed that they were negatively affected by lack of availability of ICT infrastructure. Out of the 121 students 42 or 34.7 per cent strongly agreed, 29 or 24 per cent agreed, neutral recorded 24 or 19.8 percent, while 17 or 14 per cent disagreed and 9 or 7.4 per cent strongly disagreed.

Lecturers were asked to indicate where they accessed internet from. The majority of the lecturers indicated that they accessed from their office 15 or 57.7 per cent, 3 or 11.5 percent indicated that they accessed from the department, while some of the lecturers mentioned that they accessed internet from home 3 or 11.5 per cent from home and 3 or 11.5 per cent accessed from elsewhere. Majority of the students were of the view that limited ICT skills of UNZA staff handling Distance Education negatively affected their studies. Out of 121 students 38 or 31.4 per cent strongly agreed, 49 or 40.5 per cent agreed, neutral were 18 or 14.9 per cent, those who disagreed were 10 or 8.3 per cent and who strongly disagreed 6 or 5 per cent.

> *"One of the members of staff said that Institute of Distance Education faced various challenges; most of the challenges emanated from financial problems as there was need to equip the university with various gadgets which would enhance utilization of ICTs; and in the same line of financial problems, ICT gadgets were very expensive to acquire and maintain".*

4.6 Summary of Chapter Four

This chapter presented findings on the utilisation of information communication technology by distance education students and lecturers at the University of Zambia. The findings from the lecturers, students and the Institute of Distance Education (IDE) management staff revealed that lecturers and students had knowledge about ICTs.

The study also established that most students and lecturers were members of the social network face-book. The majority of students also had the basic knowledge on ICTs such as the computer, television and radio.

The study also revealed that access to learning materials from the IDE by students was limited. Students did not receive communication from the institution through email. The only information accessed online on the University of Zambia website had to do with students' assignments and various announcements such as examination time tables and dates for residential school

CHAPTER FIVE: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The chapter discusses findings that have been presented in chapter 4. The discussion focuses on the utilisation of the ICTs by the distant education students at the University of Zambia. The objectives of the study were to: to find out the level of knowledge on ICTs among lectures and students; to determine the extent of distant learners access to learning materials through ICTs; to identify the commonly utilised ICTs; to establish the measures the university of Zambia IDE put in place to increase ICTs and to investigate the main challenges faced in integrating ICTs in the delivery of the curriculum content.

5.1 Issues Related to Knowledge of Information and Communication Technologies among Lecturers and Students.

The research indicated that the levels of awareness of information communication technology (ICT) among students were high, this could be explained by the fact that a number of ICTs gadgets had been in use in Zambia for over a decade by the time of the study. Awareness in ICTs also shows the potential of utilisation. Both lectures and students were familiar with search engines particularly google. This high level of awareness of ICTs could be attributed to the fact that both students and lecturers were operating in a learning environment where they regularly had to search for latest information, share this information and use it. This study however showed that knowledge of ICT, which required application skills were not high and this could be explained by lack of deliberate training programs for IDE students and lecturers at the university. The using of ICT is making major differences in the learning of students and teaching approaches. Schools in the Western World invested a lot in ICT infrastructures over the last 20 years, and students use computers more often and for a much larger range of applications (Volman, 2005). Studies reveal that students using ICT facilities mostly show higher learning gains than those who do not use. For instance, Kulik's, (1994) finding across 75 studies in the United States showed the following: first Students who used computer tutorials in mathematics, natural science, and social science score significantly higher on tests in these subjects; second students who used simulation software in science also scored higher. Third primary school students who used tutorial software in reading scored significantly higher on reading scores and fourth young students who used computers to write their own stories scored significantly higher on measures of reading skill. Moreover, Kulik, (1994) stated that students who used word processors or otherwise used the computer

for writing scored higher on measures of writing skill. Furthermore, the use of ICTs in education also shifts the learning approaches.

According to Orodho, (2003) distance learners usually write to their tutors about problems they come cross in their lecture notes. Some write to seek clarification on the grades that they get but in developing countries the postal system is so low that it takes weeks for learners to get his or her reply from the tutor. This communication was not happening in Zambia probably due to low knowledge levels of ICTs. Limited application skills of ICT scould be the explanation for lack of communication between them and their students for those lecturers who had access to the internet and yet never interacted with their students. Majority of the lecturers did not use email to send or receive assignments or send feedback after marking student's assignments.

Since knowledge on ICTs was generally high for both lecturers and students, it could be argued that lecturers and students had very high chances of utilizing the ICTs. The argument is based on the finding by many that knowledge on ICTs of lecturers and students could affect the utilization of ICTs Dawson, (2007). It could be concluded that among lecturers and students they was potential utilization of ICTs.

5.2 Extent of Distance Learners' Access to Learning Materials through ICTs

The extent of distant students accessing learning materials through ICTs was little because modules were not uploaded, even though the Institute of Distance Education (IDE) managed to upload assignments on the university website, examination time tables and various announcements for the students. The none accessing modules through ICTs by the students could be attributed to the fact that the University of Zambia was still trying to put things in place since they had plans of doing that. Although Ghana is a sub-Saharan African country it has managed to upload materials such as modules on to the internet and also use email for communication Anyamele, (2004). Students indicated that they had never accessed any online lectures. Since the existing format of course materials was print and the most commonly used communication system between students and the University was through the postal systems and phone calls on their mobile lines. However, many students expressed disappointment at the late arrival of course material and information of general in nature through the post. Therefore, there was need to consider ICT formats of course material and means of distributing such kind of materials in a more efficient manner. Computers could be used to produce flexible multimedia course (UNESCO, 2003). Computers could also make it

possible to attach materials for further reading. In addition materials that were produced using computer could be saved in electronic formats that are easily updated.

Using internet would make it possible to refer students to a lot of other readings that could be accessed through various database and a lot of electronic journal similarly, subject to access, internet could make the materials available to the internet could make the materials available to the students much faster than the postal system (UNESCO, 2003).

5 .3 Commonly Utilised Information and Communication Technologies

The majority of the students choose email as their preferred way of receiving information amongst post office, fax, radio, television, phone and email followed by the post office from the institute of the distance education despite a number of them not having access to the internet in their areas. The choice of post office as the second preferred mode could be as a consequence of seeing this mode as a tried and tested way since this was the oldest mode of communication. Siachiwena, (1980) indicated that the common mode of communication was the postal system. The study found out that the students had never downloaded any modules using the internet.

The most common used ICTs by students were computer, radio cassette recorders, digital video decoder, T.V and cell phone. Out 121 students 85 percent of the students had electricity in their house. According to best, (1997) video recorded programmes could bring the same results as live transmission of satellite television. Audio visual material had potential to be useful since the majority of the students had access to audio vision equipment through ownership. The number of students who had access to computers out of the 121 students was 62 percent substantial; therefore computer based materials such as CD ROMS had the potential to be useful to the 62 percent that had access to computer. Students accessed internet from different points 62 percent accessed internet from the internet cafés, modems and phones and only 33.6 percent access from computer laboratories for UNZA.

In distance education learners are usually adults who left school a long time ago. They have either lost study skills or dropped out to early to have acquired any. They therefore find it difficult to study and write assignments on their own. Study skills include skills such as note taking, using abbreviations, and skills of writing an essay, typing, searching for information on the internet, citing references, making summaries and using text books. These skills are important in promoting learning. Study skills relate to how one handles the study materials,

and therefore related to learning outcomes. Many researchers have observed that the skills to use ICT is likely to have bearing on the use of ICT Brush, (2008). The study observed that both lecturers and students didn't have the necessary skills; the most popular skills known was Microsoft Word processing. Majority of the lecturers did not have any ICT training that enabled them to use ICT components and programming such us uploading modules and sending assignments through email. This knowledge has to be developed through further training. Due to their low levels of skills and experiences in ICT, lectures needed training in the use of various ICTs.

5.4 Measures the University of Zambia IDE put to Increase ICTs Utilisation

Information and Communication Technologies ICTs includes computers, the Internet, and electronic delivery systems such as radios, televisions, and projectors among others, and is widely used in today's education field. The University of Zambia took some major interventions to increase ICTs utilisation such as, introduction of the university of Zambia web page, email accounts for all students, uploading assignments on the web page and uploading of various information such as examination time tables and dates for residential school. The University of Zambia IDE has been using the radio and television to send information to the students. The introduction of email addresses has not been put to good use yet. The students indicated that they had never received any information from IDE through email. The University of Zambia should learn from Gahana who are using email for communication with students and uploading of modules on the internet Beebe (2004). A number of previous studies have shown that an appropriate use of ICT can raise educational quality and connect learning to real-life situations (Lowther, 2008).

Information and communication technologies tend to expand access to education. Through ICTs, learning can occur anytime and anywhere. Online course materials, for example, can be accessible 24 hours a day, seven days a week. Teleconferencing classrooms allow both learner and teacher to interact simultaneously with ease and convenience. Based on ICT, learning and teaching no longer depend exclusively on printed materials. Multiple resources are abundant on the Internet, and knowledge can be acquired through video clips, audio sounds, visual presentation and so on. Current research has indicated that ICT assists in transforming a teaching environment into a learner-centered one (Castro Sánchez and Alemán, 2011).

5.5 Main Challenges Faced in Integrating ICT in the Delivery of the Curriculum Content in Distance Education

The main challenges faced in the integrating ICT in the delivery of the curriculum content are infrastructure, access to ICTs and skills on how to use the ICTs. The University of Zambia did not have enough computers to provide each lecturer with a computer in their offices consequently access affected use of computers and the attendant facilities like internet. Lecturers had to go departmental computer rooms some lecturers ended up going out off campus to access internet.

Infrastructure as a Challenge

Although at the time of the study the university was in the process of setting up computer laboratories in the provincial capitals with the first to be opened at the Copperbelt University in Kitwe on the Copperbelt province, many African countries face unreliable power supply, uncompleted networks for data and telecommunications, coupled with the high cost of energy and telecommunications. The Economic Community of West African States (ECOWAS) (2001) Observed that its countries face the serious challenge of affordable and accessible telecommunication backbone and stable electricity supply). This lack of affordable and accessible telecommunication backbone and a stable electricity supply impact on the rollout of ICT in education and development initiatives. This has additional implications for the concentration of initiative in cities due to the wide gap in ICT access between urban and rural areas. Gillwald, A. & Esselaar, S. (2005) notes that, at universities, difference in the status of infrastructure (and donor interventions and the levels of economic development) has led to different levels of ICT adaptation. At most African universities, underlying infrastructure is inadequate to support high bandwidth intensive applications.

Funding and Budget Allocations

Despite a mainstream claim that investing in ICT is cost-effective, as well as the continuous decline in ICT prices, the total cost of ownership of ICT including hardware, software, maintenance, upgrading, and skills development remain high. Investing in ICT for learning could be perceived as an additional cost, and sustaining meaningful ICT utilisation is a problem face by many institutions Ifinedo, P, (2006). This could be reason for the low utilisation of ICTs in Zambia. ICT may not feature high on the list of education institutions' investment or priorities when compared to important items like paying staff salaries or maintain utilities.

5.6 Conclusion

This section of the chapter focuses on the specific conclusions arrived at during the study. The study looked at the utilisation of information communication technologies by distance education students at the University of Zambia. The study revealed that level of awareness on information and communication technologies were high while levels of knowledge in ICTs were low. Most of the students knew what ICTs was and were able to mention a few gadgets involved in ICTs. Lectures were able to type their own work. The extent of distance learner's materials through ICTs was very low. Students had never downloaded modules from the internet apart from the assignments uploaded by the institute of distance education.

The study revealed that they was little utilisation of ICTs at the university of Zambia. Majority of the students and lecturers had never communicated with lecturers either by email or phone. Hence the leaner – instructor interaction is very poor. The learner – content was only through the modules and interaction during residential schools. The study also established that the students had basic ICTs such as cell phones, computers, DVD and television.

The study found out that the main challenges in integrating information communication technology in the delivery of the curriculum content was infrastructure. Some students lived in areas that were not serviced by electricity or any internet provider. The other challenge was lack of access to the ICTs and skills to use the ICTs. In terms of skills both the lecturers and students were mainly comfortable in using word. Most of the lecturers were not able to operate the internet without help. The majority of lecturers and students indicated that they had never done any form of ICT training.

5.7 Recommendations

(a) The Institute of Distance Education at the University of Zambia should make compulsory training in information communication technology for all first year students or attaining a certificate in ICT before joining the institution. They should also train the lecturers in the relevant ICTs such as word, how to use the internet and power point presentation.

(b) The University of Zambia should increase funding for ICT expansion in distance education so that institution can also compliment print materials with audio tapes, flash disks, DVDs and uploading information on the internet such as modules.

(c) Future researches should carry out studies to determine utilization of ICTs following the setting up of computer laboratories in provincial capitals of Zambia

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APPENDICES

APPENDIX A: QUESTIONAIRE FOR STUDENTS

Dear Respondent

In Zambia, post services as a means of communication and interaction has been labeled to be slow. However communication between lecturers and learners is critical. Alternative means of communication particularly use of new information and communication technologies can if utilized enhance both the fan and speed of this communication. Learners tend to be motivated by being in close touch with their facilitator or teachers as such; quick feed-back is a necessity

The questionnaire assesses your knowledge and usage (current and future usage) of information communication technology in distance education.

As a respondent, your participation is voluntary and you have the right to terminate participation at any time. In addition, your participation is anonymous and all responses provided will only be used for master's research purposes and no information will be made available to any third party.

Finally, your participation in this research is highly valued and appreciated.

Humphrey Katye Makunka

Masters Candidate

Dept of Adult Education

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University of Zambia

Mobile: 0977-330347

Please answer the following questions by ticking (√) the relevant block or writing down your answer in the space provided.

Your responses will remain anonymous. Your cooperation is highly appreciated.

Example of how to complete this questionnaire

What is your age?

If you are 42 years old, you would answer this question as follows:

16-21	22-25	26-35	36-49
			√

Section A

This section aims to obtain background or biographic information

Question 1: what is your gender?

Please select only one option	Male	Female

SECTION B: BEHAVIOR/USAGE OF ICTS

This section of the questionnaire explores your experience and use of ICT in the distance education.

Question 2: Do you know what ICT is?

(a) Yes
(b) No

Question 3: if yes to question 7 above briefly explain what ICT is?

……

……

Question 4: do you think ICT can be used I learning

(a) Yes
(b) No

Question 5: if yes to question to 10 mention ways in which ict can be used in learning.

……
……

Question 6: do you own a computer?

(a) Yes
(b) No

Question 7: if no to question 11 then where do you access a computer from at home?

(a) Work place
(b) Internet café
(c) Friends computer
(d) Any other specify ……

Question 8: have you done any formal training in ICT?

(a) Yes
(b) No

Question 9: how do you rate yourself in terms of your skills in working with the following programmes?

	Tick () where appropriate				
	Very good	good	average	Poor	Very poor
PDF					
Word					
Excel					
Power point					
Publisher					
S.P.S.S					

Question 10: amongst the programmes mentioned above which ones would you like to be taught?

……

Question 11 do you know how to use the internet as a source of learning?

(a) Yes

(b) No

Question 12: in what way do you use the internet as a source of learning?

……

Question 13: in your home town where do you access internet from?

Question 14: choose the modes in which you access internet given the rating below?

	Tick () where appropriation				
	Very good	good	average	poor	Very poor
1. Computer Laboratories for Unza					
2. Internet Cafes					
3. Mtn, Airtel or Zamtel Modems					
4. Phone					

Question 15: do you have access to computer laboratories when you come for residential school?

(a) Yes

(b) No

Question 16: do you know the following search engines below?

Please select only one option	Tick () where appropriate	
	Yes	No
1. Yahoo		
2. Google search		
3. Bing		
4. Ask.com		

Question 17: if your answer is yes to the question 22 are you able to use these search engines to look for information without help?

(a) Yes
(b) No

Question 18: do you have an email address?

(a) Yes
(b) No

Question 19: how often do you communicate with the institute of distance education using email?

Please select only one option	Tick (√) where appropriate	
	Yes	No
1. Once a month		
2. Two times in a month		
3. Three times in a month		
4. Never		
5. Other specify…..		

Question 20: In what other means of communication do you use the most to communicate with your lecturers?

……

Question 21: Are you able to use a digital Camera?

(a) Yes ( )

(b) No ( )

Question 22: If yes to question 21 are you able to include photos in your assignments and presentations?

(a) Yes ( )

(b) No ( )

Question 23: Are you a member of any of the following social networks?

Please select only one option	Tick (√) where appropriate	
	Yes	No
1. Face book		
2. Twitter		
3. My Space		
4. Hi 5		
5. Tagged		
6. Skype		
7. Others		

Question 24: which of the following do you own?

Please select only one option	Tick (√) where appropriate	
	Yes	No
1. Podcast		
2. Printer		
3. Internet connection at home		
4. Digital Video Decoder (DVD)		
5. Telephone		
6. T.V (Television)		
7. Radio castle recorder		
8. Modem		

Question 25: In which means do you usually receive general information from the institute of distance education?

Question 26: What is your preferred way of receiving information from the Institution of distance education? (Please tick any correct ones)

(a) Posted mail (through the post office)
(b) By Fax
(c) By Radio
(d) By TV
(e) Through the Regional centre by phone
(f) Email
(g) Other specify

Question 27: Amongst the modes mentioned above choose 4 which you would like to access learning materials from?.....

Question 28: Are you able to down load modules from the internet?.....

Question 29: To what extent do the following factors negatively affect the use of ICTs in distance education?

	Please indicate you level of agreement by Ticking in the appropriate box				
	Strongly disagree	disagree	neutral	agree	Strongly agree
1. Lack of affordable internet					
2. Lack of availability of ICT infrastructure					
3. Limited ICT skills on the part of university staff					

Question 30: If the University of Zambia was to make an ICT programme compulsory what things would you like to be taught?.....

Question 31: Do you have any suggestions for improving utilization of ICTs in distance education at the University of Zambia? ……

APPENDIX B: QUESTIONAIRE FOR LECTURERS

Dear Respondent

In Zambia, post services as a means of communication and interaction has been labeled to be slow. However communication between lecturers and learners is critical. Alternative means of communication particularly use of new information and communication technologies can if utilized enhance both the fan and speed of this communication. Learners tend to be motivated by being in close touch with their facilitator or teachers as such; quick feed-back is a necessity.

The questionnaire assesses your knowledge and usage (current and future usage) of information communication technology in distance education.

As a respondent, your participation is voluntary and you have the right to terminate participation at any time. In addition, your participation is anonymous and all responses provided will only be used for master's research purposes and no information will be made available to any third party.

Finally, your participation in this research is highly valued and appreciated.

Humphrey Katye Makunka

Masters Candidate

Dept of Adult Education

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Mobile: 0977-330347

Please answer the questions by ticking (√) the relevant block or writing down your answer in the space provided.

Your responses will remain anonymous. Your co-operation is highly appreciated.

Example of how to complete this question ire

What is your age?

If you are 42 years old, you answer this question as follows:

16-21	22-25	26-35	36-49
			√

Question 1: What is your gender?

Please select only one option	Male	Female

Question 2: Do you have a computer in your office

(a) Yes
(b) No

Question 3: Where do you access internet from? (Tick all correct answers)

(a) Department
(b) My office
(c) At home
(d) Elsewhere (please specify)

Question 4: Are you able to use the internet without help from any one?

(a) Yes
(b) No

Question 5: Have you done any form of ICT training?

(a) Yes
(b) No

Question 6: How do you rate yourself in terms of skills in working with the following programmes?

	Tick (√) where appropriate				
	Very good	Good	Average	Poor	Very poor

1. P.D.F					
2. Word					
3. Excel					
4. Power Point					
5. Publisher					
6. S.P.S.S (statistical package for social science)					
7. Drawing diagrams & making table					

Question 7: Amongst the programmes mentioned above which ones would you like to be taught?

……
……

Question 8: Do you know the following search engines below?

Please select only one option	Tick (√) where appropriate	
	Yes	No
1. yahoo		
2. Google		
3. Bing		
4. Ask.com		

Question 9 : If your answer is yes to Question 8 are you able to use these search engines to look for information without help?

(a) Yes
(b) No

Question 10: are you a member of any of the following social networks?

Please select only one option	Tick (√) where appropriate	
	Yes	no
1. Face book		
2. Twitter		
3. My space		
4. Hi 5		
5. Tagged		
6. Skype		
7. Others		

Question 11: Have you provided access to lectures through the following modes mentioned below to students?

Please tick all correct ones	Tick (√) where appropriate	
	Yes	No

1. Podcast		
2. Radio		
3. Video Conference		
4. Digital Video Decoder		
5. Telephone		
6. TV (television)		
7. Audio Tapes		
8. Audio Compact Discs (CD)		

Question 12: (a) which ways would you prefer to lecture to students from the ones mentioned above?----------

Question 13: are you able to type your work on the computer?

(a) Yes
(b) No

Question 14: Are you able to upload modules on the internet for students to access?

(a) Yes
(b) No

Question 15: Do you communicate with students using email?

(a) Yes
(b) No

Question 16: How often do you communicate with students by email?

Please select only one option	Tick (√) where appropriate	
	Yes	No
1. Once a month		
2. Two times in a month		
3. Three times in a month		
4. Never		
5. Other specify….		

Question 17: Do you send assignment by email?

(a) Yes
(b) No

Question 18: How often do you use the phone to communicate with the students?

Please select only one option	Tick (√) where appropriate	
	Yes	No
1. Once a month		
2. Two times in a month		
3. Three times in a month		
4. Never		
5. Other specify…		

Question 19: In what ICT programmes would you like to be trained in?

Question 20: What problems do you face in trying to use ICT to teach?

Appendix C: Interview Schedule for Management Staff

1. Do you have an independent website as institute of distance education?

2. Do you train lecturers in ICTs?
3. What provisions have you put in place for students to learn through ICTs?
4. Do you include infrastructure development for ICT in your annual budget?
5. What challenges do you face in integrating ICT in the delivery of the curriculum content?
6. What has been put in place in the provinces for students to be able to access ICTs?
7. Are students able to do online registration?
8. What have you put in place to encourage lecturers to use ICTs?
9. What suggestions can you give to improve utilization of ICT in distance education?

APPENDIX D :Matrix

Objectives	Nature of Information	Source of Information	Methods

1) To find out the level of knowledge on ICTs among lecturers and students;	Education on ICTs	Lecturers Students institute	Interview Questionnaire
2) To determine the extent distant learners access to learning materials through ICTs;	Impact of ICT -Benefits of ICT -Learning materials -What learning materials are available	Students Lecturers Institute	Questionnaire Interview
3) what were the most commonly utilized ICTs;	-Common utilized ICTs	Lecturers Students institute	Interview Questionnaire
4) To establish what measures the University of Zambia IDE put in place to increase ICTs;	- What is on the ground -Computer lab -Internet accessibility	Institute Students	Interview Questionnaire
5) To investigate the main challenges faced in integrating ICT in the delivery of the curriculum content and	Main challenges -accessibility -infrastructure	Students Lecturers Institute	Interview Questionnaire

Appendix E: Tentative Budget

Items/Activities	**Quantity**	**Unity Price**	**Total Cost**
Ream of papers	5	K25,000	K250,000
Pens	1 box	K40,000	K40,000
Writing pad	2	K10,000	K20,000
Flash desk	1	K100,000	K100,000
Typing	2	K100,000	K500,000
Printing		K500	K1,500,000
Photocopying		K200	K500,000
Binding			K200,000
Transport	1		K2,000,000
Accommodation	1		K3,000,000
Food	1		K1,000,000
Contingency			**K1,610,000**
		TOTAL	**K9,610,00**