

School of Education

The Investigation of an Open Distance and e-learning (ODEL) Centre at
the University of Dar es salaam

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DECLARATION

The work presented in this thesis is, to the best of my knowledge and belief, original, except as acknowledged in the text, and has not been submitted, either in whole or in part, for a degree at this university or at any other university.

Signed,

.....

Sophie Mynah Mgaiwa

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TABLE OF CONTENTS

DECLARATION	<i>i</i>
ACKNOWLEDGEMENTS	<i>ii</i>
LIST OF ABBREVIATIONS AND ACRONYMS	<i>iii</i>
LIST OF TABLES	<i>iv</i>
LIST OF APPENDICES	<i>v</i>
ABSTRACT	<i>vi</i>
Chapter 1 : OVERVIEW AND ORIENTATION	1
1.1 Introduction	1
1.2 Research Problem and Questions	1
1.3 Background	2
1.4 Rationale	4
1.5 Significance	5
1.6 Structure of the thesis	5
1.7 Summary	6
Chapter 2 : LITERATURE REVIEW	7
2.1 Introduction	7
2.2 The University of Dar es salaam	7
2.2.1. Integration of ICT in Teaching and Learning at UDSM	10
2.3 Distance Education and e-learning	11
2.3.1 e-learning	13
2.3.3. Opportunities of e-learning	14
2.3.4. Challenges of e-learning	15
2.3 Requirements for e-learning	16
2.3.1 e-learning model	17
2.3.2 Requirement for creation of content	17
2.3.3 Technical /technology Requirements	18
2.3.4 Expertise required for e-learning	19
2.3.5 Required support services	21
2.4 Existing e-learning Models	21
2.4.1 e-learning in Malaysia	21
2.4.2 E- Learning at University Tun Abdul Razak (UNITAR)	22
2.4.3 UNITAR e-learning model	23
2.4.4 Challenges faced by UNITAR in the establishment of e-learning	25
2.4.5 e-learning in Canada	26
2.4.6 Distance Education and Technology Unit	27
2.4.7 Challenges faced by UBC	28
2.4.8 DE&T project management model	29
2.5 Chapter Summary	29
Chapter 3 : RESEARCH METHODOLOGY	31
3.1 Introduction	31
3.2 Research Approach	31
3.3 Research design	32
3.3.1 Phase One	33
3.3.2 Phase Two	37

3.3.3 Phase Three	37
3.4 Sampling	40
3.5 Participants	40
3.6 Data Collection Methods	41
3.7 Data Analysis	41
3.8 Validity and Reliability	42
3.9 Ethical issues	43
3.9.1 Consent	43
3.9.2 Confidentiality	43
3.9.3 Data Storage	43
3.10 Chapter Summary	44
Chapter 4 : RESEARCH RESULTS	45
4.1 Introduction	45
4.2 Results obtained from the questionnaires	45
4.2.1 Questionnaire A: Student	45
4.2.2 Questionnaire B: Academic Staff	53
4.2.3 Questionnaire C: Management	61
4.2 Results obtained from semi-structured interviews	64
4.2.1 Students (Focus groups)	64
4.2.2 Academic staff	66
4.2.3 University Management	67
4.2.4 Technical staff	72
4.3 Results obtained from unstructured interviews	77
4.4 Summary	77
Chapter 5 : DISCUSSION, RECOMMENDATIONS AND CONCLUSION	78
5.1 Introduction	78
5.2 Findings and Results Collected from the Research	78
5.2.1 Rationale for an ODeL centre at the University of Dar es salaam	79
5.2.2 Required Expertise (skills and knowledge) for e-learning	83
5.2.3 Required Resources	85
5.2.4 Required Structures	88
5.2.5 Required Strategies	90
5.2.6 Required Policies	93
5.3 Recommendations	94
5.3.1 Recommendations for Introducing Practice	94
5.3.3 Recommendations for Further research	94
5.4 Conclusion	95
References	97
APPENDIX A	107
APPENDIX B	111
APPENDIX D	117
APPENDIX E	119
APPENDIX F	121
APPENDIX G	122

LIST OF ABBREVIATIONS AND ACRONYMS

AVU	African Virtual University
AVU-LC	African Virtual University-Learning Centre
ERB	Economic Research Bureau
FIVE	Faculty of Informatics and Virtual Education
HESP	Higher Education Strategic Plan
ICT	Information Communication Technology
IPP	Information Policy Plan
ITMP	Information Technology Master Plan
ITP	Institutional Transformation Programme
ITRU	Instructional Technology Resources Unit
MBA	Masters of Business Administration
MSTHE	Ministry of Science Technology and Higher Education
ODeL	Open Distance and e-learning
OUM	Open University of Malaysia
PCC	Project Coordination committee
PEDP	Primary Education Development Plan
RMIT	Royal Melbourne Institute of Technology
SEDP	Secondary Education Development Plan
TEIL	Technology Enhanced Independent Learning
TENET	Tanzania Education Network
TIE	Tanzania Institute of Education
TOR	Terms of Reference
UBC	University of British Columbia
UCC	University Computing Centre
UDSM	University of Dar es salaam
UNITAR	University Tun Abdul Razak

LIST OF TABLES

2.1	Learners' Needs from Distance Education	16
2.2	Guiding questions to minimise constraints for learners in an e-learning environment	19
2.3	Guiding questions to minimise the technology constraints in an e-learning environment	20
3.1	Summary of study participants	43
4.1	Demographic information of students	48
4.2	Computer and internet access and usage for educational purposes	49
4.3	Experiences with Blackboard	50
4.4	Students' views of e-learning environments	51
4.5	Pedagogical point of view on e-learning	51
4.6	Students preferences of e-learning	52
4.7	Reasons for not wanting to participate in e-learning	53
4.8	Study preference	53
4.9	Students' opinion on e-learning	54
4.10	Demographic information of Academic staff	55
4.11	Positions of Academic staff	56
4.12	Main teaching area of academic staff	56
4.13	Level of students taught by academic staff	57
4.14	Computer usage by academic staff	57
4.15	Attitude toward ICT in teaching	58
4.16	Usage of ICT for academic staff	58
4.17	Satisfaction with ICT support	59
4.18	Technology courses attended by academic staff	59
4.19	ICT in teaching	60
4.20	Academic staff views of teaching online	61
4.21	Factors preventing greater use of technology	62
4.22	Can academic staff adapt to e-learning	62
4.23	Demographic information of Management	63
4.24	Management views on e-learning environment	64
4.25	Management usage of the Internet	64
4.26	Management opinion one-learning	65
4.27	Skills required for e-learning as identified by the management	66
4.28	Internet usage	67
4.29	Blackboard usage	68
4.30	Understanding of e-learning	70
4.31	Management opinion of e-learning	71
4.32	UDSM potential for e-learning	72
4.33	Developing staff skills	73
4.34	Important skills for e-learning	74
4.35	Background information of technical staff	75
4.36	Views on e-learning by the technical staff	76
4.37	Technical expertise	77
4.38	Strength of the technical staff	77
4.39	Areas which require improvement	78

LIST OF APPENDICES

Appendix A	Questionnaire A – Student	106
Appendix B	Questionnaire B – Academic Staff	110
Appendix C	Questionnaire C – Management	114
Appendix D	Semi-structured Interviews	116
Appendix E	Research Project Information Sheet	118
Appendix F	Consent Form	120
Appendix G	Copyright Statement	121

ABSTRACT

Many higher education Institutions commit themselves to e-learning because they believe in its effectiveness as an alternative to traditional face to face methods of delivery, e-learning may to some extent increase enrolment and reduce training costs while allowing students the flexibility to attend classes at convenient times and places. University of Dar es salaam (UDSM) being the prime public university in Tanzania wants to adopt e-learning techniques in courses delivery; however the establishment of e-learning requires systematic planning, design, development and evaluation in order to achieve successful implementation. Therefore there is a need for the UDSM to address critical issues that might be faced by academics and the students in future.

The aim of this study was to identify a culturally appropriate model inclusive of the most effective strategies and policies required for the establishment of an Open Distance e-learning (ODeL) centre at the University of Dar es salaam (UDSM). The study examined factors and conditions that reveal the importance of the development of an ODeL centre at the University of Dar es salaam, as well as analysing expertise (skills and knowledge) of the university's academic and technical staff. It also examines existing models of similar centres from universities in both developed and developing countries. A mixed method was adopted where data was collected using a variety of tools: survey; interviews and content analysis.

This study has indicated that the University of Dar es salaam can successfully develop an ODeL centre and implement e-learning if optimal capabilities of the selected media and technology are utilised effectively and efficiently. To support the development and delivery of e-learning a number of staff with a variety of skills and appropriate Information Communication Technology infrastructure are required. UDSM and other institutions wishing to participate in e-learning should review their educational policies and formulate strategies to ensure sustainability and quality of delivery.

Chapter 1 : OVERVIEW AND ORIENTATION

1.1 Introduction

In order to participate effectively in the knowledge based economy of the 21st century, there is a need for the University of Dar es salaam to implement e-learning as the way to increase enrolment and provide access to higher education for the majority of Tanzanians.

This thesis reports on the study conducted to investigate the development of an Open Distance e-learning (ODeL) centre at the University of Dar es salaam in Tanzania to support and promote the successful implementation of e-learning.

1.2 Research Problem and Questions

The study investigates the factors and conditions surrounding the development of an ODeL centre at the University of Dar es salaam which is the main university in Tanzania. The aim of this study is to establish whether there is a need for an Open Distance e-learning Centre at the University and if so, identifies the structures, resources, strategies and policies that need to be implemented for the development and sustainability for such a Centre.

More specifically, the following three research questions will be addressed:

1. What are the factors and conditions at the University of Dar es salaam and Tanzania that make the development of an ODeL centre relevant to its continuing development as a centre of e-learning?
2. What kind of expertise (skills and knowledge) is required by the University of Dar es salaam for the development of an ODeL centre?
3. What resources, structures, strategies and policies are required to establish an ODeL centre at the University of Dar es salaam?
4. How existing centres at the University of Dar es salaam can be enhanced to successfully promote the implementation of e-learning?

1.3 Background

Like other African countries, Tanzania is unable to meet the developmental goals of the new millennium. The ever increasing population growth means that those seeking access to education at all levels; primary, secondary, and tertiary will increase. The government made an effort to improve access to primary and secondary education by expanding pupils' enrolment through the Primary Education Development Plan (PEDP) (Ministry of Education, 2001) and the Secondary Education Development Plan (SEDP) (Ministry of Education, 2004) which started in 2001 and 2004 respectively. Primary and Secondary schools were built in every ward to ensure that all pupils aged seven and above attended school. The introduction of these initiatives, although very worthy, has exacerbated the challenges faced by Higher Education institutions in Tanzania. The problem is that Higher Education institutions are not expanding enough to accommodate the increasing number of students who are the output of these projects due to the resources required to expand teaching facilities. Currently only 30% of qualified high school leavers are able to join universities every year (MSTHE, 2004). This is due to a number of factors: demand for education exceeds the institutions' capacity to deliver; increasing costs of quality higher education in overseas countries; and lack of facilities available for students in remote areas.

The University of Dar es salaam is the main public university in Tanzania which in 2005 admitted about 15,196 students of the 46,296 admitted to all universities in the country (MSTHE, 2005). This University is the Government University and was established in 1970. It is located in Dar es Salaam the capital and main business city of Tanzania on the Observation Hill twelve kilometres from the city centre. It has about 1,200 staff (academic, technical and administrative). There are over 50 programs offered, ranging from Certificate level to Doctoral qualifications. The University also admits extra students from other East African countries, mainly Kenya and Uganda, and also admits students from several other countries throughout the world through established links such as exchange programs or applications. The university uses English as the language of instruction, however many students are Tanzanians and their first language is Kiswahili.

The University of Dar es salaam is already aware that access to affordable, flexible and quality education is essential for creating development opportunities that will enable people to participate more effectively in the much needed knowledge based economy of the 21st century. The University currently has to reject a growing number of qualified student applications to the University as it is unable to accommodate them. The University is now thinking of alternative ways of providing distance education through e-learning because information technology can provide universities with new teaching methods to enable flexible and equitable ways of providing education (Bates, 2005) and provides knowledge construction that can meet the needs of the knowledge based society and with large numbers of students e-learning is cost effective compared to traditional face to face teaching (Bates, 2005).

There is already acceptance of this new education delivery mode at the University. Through the African Virtual University (AVU), the University has established a Virtual Learning centre which offers online courses. Currently the centre is running two bachelor degree programs both originating from Australia; a business studies program from Curtin University of Technology and a computer science program from the Royal Melbourne Institute of Technology (RMIT) University.

Running external programs at the University is a temporary solution and will not solve the entire enrolment problem. Therefore, there is a need to consider other ways of increasing access to higher education by delivering programs established by the University to a number of students electronically within the country as well as other regions. Information and communication technology (ICT) is making it easier for institutions to implement distance education (Harasim, 1995). It is planned that the ODeL centre will be responsible for the development of a variety of course content within courses that can be easily reused and updated. The centre will help faculties to design and develop e-learning courses that can be accessed by remote students and thus reduce the requirement for physical teaching facilities. For economic survival, lifelong learning needs to be reorganised around new technologies (Bates, 1995). Most workers want to be lifelong learners who can study at their work or homes, as well as have access to new knowledge and research (Bates, 2005).

Investing in e-learning has several advantages such as increasing access to education; improving the quality of learning; reducing costs; preparing students for a knowledge-based society; as well as responding to market demand (Dolence & Norris, 1995). There is an indication that development of an ODeL centre at the University of Dar es salaam will be of interest to the country because it would represent an investment in the people and knowledge of Tanzania (Carnegie Corporation, 2000).

Example currently exist e-learning models in many developed countries such as Canada (University of British Columbia), the United States (e.g. Phoenix University) and Europe (e.g. Open University of UK). Other models also exist in developing countries like Malaysia (e.g. Multimedia University and UNITAR) and Pakistan (Virtual University of Pakistan) which could be used to inform practice at the University of Dar es salaam. As each university is unique, however, it is essential to investigate the specific requirements for the establishment of an ODeL centre at the University of Dar es salaam. e-learning by nature involves more than just transmission of information; it also involves the transmission of cultural/social paradigms among the learners. Therefore it is important for the design of curriculum materials for e-learning to be sensitive to cross national cultural experiences (Cummins & Sayers, 1996).

1.4 Rationale

As the establishment of e-learning requires a strategic plan and well designed policies, the rationale for this study is based on the fact that the study has the potential to determine what has to be done in order to create an effective ODeL centre. In particular, the research will investigate the following:

- The need or pressure that makes the establishment of an ODeL centre necessary;
- The existing potential for e-learning;
- The requirements for an effective e-learning environment including potential resources, appropriate structures and most effective strategies and policies that are required to establish an ODeL centre at the University of Dar es salaam.

1.5 Significance

The results of this research will be significant in the following ways:

- This research will create University knowledge that will ultimately lead to the integration of an appropriate e-learning model (structure, strategies and resources) suitable for the University of Dar es salaam as well as inform policy development on Distance and e-learning.
- The outcomes of this research can be used to guide the implementation of an ODeL centre at the University of Dar es salaam. Other institutions in the country who wish to participate in a similar process will also be able to use the information as a reference guide.
- With the implementation of an ODeL centre students will have greater access to higher education courses and the flexibility that online learning provides. Students will be able to study at a location convenient to them and within a suitable timeframe. They will also have the opportunity to develop competencies with regard to information and communication technologies (ICT) and be able to increase the speed of the response rate from their faculties and fellow colleagues. One of the key benefits for students is the opportunity to participate and belong to an online community which will not only stimulate and challenge but will also provide support.

1.6 Structure of the thesis

This thesis is divided into five chapters as follows:

Chapter one gives an overview and orientation to this research project. It outlines the research problem, background, significance, rationale for the study, and most importantly it highlights the research objectives and questions.

Chapter Two reviews the literature associated with the key concepts of the study and shows how the research project arises from existing research knowledge.

Chapter Three reports on the methodology used to conduct this study. It describes the research design, setting, instrumentation, procedure, data analysis and ethical issues.

Chapter Four presents the results or outcomes from the study. It summarises data collected during the research project which is used together with the literature to form answers to the research questions.

The final chapter of the thesis (Chapter Five) discusses the results obtained from the research and outlines the conclusions drawn from this thesis. It also provides a number of recommendations and describes possible future research implications.

1.7 Summary

This chapter has provided a framework for the study. It attempts to provide some context for the implementation of the ODeL centre at the University of Dar es salaam. The objective, followed by the key research questions is identified. An outline of the structure of the thesis is also presented. The following chapter (two) provides a review of the current literature in the relevant fields of e-learning.

Chapter 2 : LITERATURE REVIEW

2.1 Introduction

This chapter examines the literature on the necessity for the establishment of an ODeL centre at the University of Dar es salaam. The researcher identified factors from the literature that need to be considered when developing an e-learning model. The researcher also investigated challenges, problems and disadvantages that can be anticipated and compensated for in the implementation phase.

Implemented e-learning models from both developed and developing countries were investigated in order to determine whether they can inform appropriate practice at the University of Dar es salaam by investigating their value for developing an e-learning strategy. In general, the analysis of the literature assisted with identifying all of the important issues concerning the development of an ODeL Centre at the University of Dar es salaam.

2.2 The University of Dar es salaam

The University of Dar es salaam (UDSM) has been established to provide competitive academic outputs from the training and public services. Since the mid-nineties the university has been focusing on building a new identity with its own distinctive characteristics in the effort to achieve reputable and international positions in terms of the relevant and quality of education provided. With a vision to become a reputable world-class university responsive to national, regional and global development needs, the university's mission is positioned towards an "unrelenting pursuit of scholarly and strategic research, education, teaching and public service directed at attainment of equitable and sustainable socio-economic development of Tanzania and the rest of Africa" (UDSM, 2004, p. 26).

UDSM in 1994 formulated a corporate strategic plan (CSP) that provided fundamental guiding principles of the reform process including implementation of objectives and functions of the university in light of the vision and mission. Based on this plan and being the main public university in the country, UDSM had taken charge of the implementation of several policies and master plans prepared by the

government of the united republic of Tanzania. Some of these policies and plans include the Poverty Reduction Paper (Ministry of Education, 2000a), The Tanzania Vision 2025 (2000), the Education Sector Development Programme (Ministry of Education, 1998), the Teacher Education Master Plan (Ministry of Education, 2000c), Secondary Education Master Plan (Ministry of Education, 2000), the Higher Education Strategic Plan (MSTHE, 2004a) and the National ICT Policy (Ministry of Transport & Communication, 2003).

In response to these policies and plans, the university has been making a concerted effort towards increasing enrolments and enhancing the quality of education provided so that many Tanzanians are provided with quality higher education; education has been identified as a key factor towards strengthening human capabilities that can reduce poverty as specified by the Poverty Reduction Paper (Ministry of Education, 2000a). On the other hand, the National ICT Policy (Ministry of Transport & Communication, 2003) stresses the importance of the use of ICT to increase access to education and improve the quality of delivery in all types of education and training including distance learning.

Access to higher education can be determined by the number of student enrolments in these institutions. According to the Higher Education Strategic Plan (MSTHE, 2004a), the projected enrolment in higher education was 30,000 students by the year 2007. Due to constraints in physical facilities, however, it has become difficult to reach the goal; currently, the enrolment is still low when compared with the labour market demand. It is believed that with the population of about thirty six million people, Tanzania had only 40,000 graduates in 2001 (Ndibalema, 2001). This, therefore, triggered the need for the university to shift from the heavy dependency on text-based materials for teaching and learning in face-to-face environments to one of a wider access mode of delivery based on information technology. This shift has come about due to the use of technology enhanced education being identified as one of the strategies for access and quality improvement in learning in higher education (Bates, 2004).

Using technology to assist with the delivery of education and training may be expensive. The preparation of the educational materials to be put on the web delivered courses may be quite demanding, time consuming and expensive in

terms of institutional resources; however, it is very much encouraged. A significant way in which a country can accelerate its economic growth is by investing more in education (World Bank, 2002). Studies (e.g., Nyangetera, 2000) have shown that investment in education made by South East Asian countries such as Malaysia changed the status of their economy from low level to high level, while Tanzania continues to be one of the poorest countries in the world due to the minimal investment made so far towards education (Nyangetera, 2000).

Education and training is one of the few means in which to equip people with appropriate skills and resources that can be used to confront several challenges arising in the world as result of poverty, war and perceived ignorance (Anderson & Elloumi, 2004). It is furthermore believed that distance education has the potential to give learners creative thinking and problem solving skills that can be powerful allies in fighting these challenges (Anderson & Elloumi, 2004).

In responding to the government's need for providing quality education to more people, the University of Dar es salaam increased student enrolments by almost 290% from 2,898 in 1995 to 8,411 in 2002 (Luhanga et al., 2003). Apart from this achievement, the university experienced some constraints such as lack of facilities to accommodate the increased number of students. In response to observed constraints and taking on board current and new developments nationally and globally, the university reviewed the Corporate Strategic Plan (CSP) in 2003 to cover the period of 2004-2013, which emphasises capacity developments and quality assurance and directs the university towards its guiding vision and mission. The mission and vision of the university was formulated based on direct engagement of the university in the creation, transmission and evaluation of knowledge and in the pursuit of academic excellence as well as providing labour markets with highly competent professionals who can contribute effectively to the development of a modern and prosperous society (UDSM, 2004, p. 27).

As a result of the Primary Education Development Programme (PEDP) and the Secondary Education Development Programme (SEDP), it is expected that more secondary school leavers will qualify for entry into universities; already the number of applicants compared to that of admitted students at UDSM gives a reasonable measure of demand for university education. According to UDSM's (2006)

statistics, UDSM received 17,164 applications in the year 2006, but manage to admit only 4,475 students which is equal to 26%; furthermore, a total number of 26,719 students joined universities in Tanzania, and by the year 2010 the number is expected to double as a result of the PEDP and SEDP programmes (Mshoro et al., 2007). Such expansion is likely to demand alternate and new improved methods of teaching and learning.

In 2007, the government of Tanzania established a public university in Dodoma which has the capacity to enrol 40,000 students when fully operational. This could reduce the pressure being placed on UDSM, especially in the undergraduate training area. However, this may not be possible in the immediate future and, hence, UDSM is liable to remain the leading university in general undergraduate programs. The same is more obvious when it comes to postgraduate training and research. According to Mshoro et al. (2007), UDSM has a competitive advantage which is likely to remain for quite some time. In fact, most of the other higher learning institutions will depend on UDSM for their staff development; therefore, the university should take advantage of this situation to consolidate its position (Mshoro et al., 2007).

Given the resource constraints and high demand for higher education, Tanzania cannot contend with the planned enrolment target without resorting to e-learning. National ICT Policy (Ministry of Transport & Communication, 2003) suggests the use of ICT as an agent to transform and improve the teaching and learning environment in Tanzania. University of Dar es Salaam is better suited in spearheading ICT-mediated Distance Education in Tanzania as it is currently the only higher academic institution with the highest concentration of human and other resources in ICT and infrastructure, providing that the requisite model, policies and organisational structures are in place.

2.2.1 Integration of ICT in Teaching and Learning at UDSM

A concerted effort has been made to integrate ICT in teaching and learning at the University of Dar es salaam. According to Mrema et al. (2004), these efforts started in 1998 when UDSM embarked on a Technology Enhanced Independent Learning (TEIL) program. This program aimed to integrate ICT in teaching and

learning with an objective of providing an independent learning environment to students. The program established an e-learning platform (Blackboard) and created some student ICT laboratories in faculties so that access to the learning platform is increased.

With the aim to improving internet accessibility, UDSM has increased bandwidth from 256kbps/512 kbps to 1Mbps/2Mbps for academic use and enhanced network connectivity so that staff and students get better access to information within and outside the UDSM network. The university also managed to establish a digital library which is seen as a major catalyst for ODeL through the university's main library which can be accessed within and outside the university network.

UDSM in 2001 established the Instructional Technology Resources Unit (ITRU) as a continuation of the TEIL program to incorporate pedagogical aspects in e-learning. The activities performed by ITRU include staff training in the best use of ICT in teaching and the establishment of video conferencing facilities to enable concurrent teaching and learning on campus.

Despite of the all the initiatives made by the university towards integrating ICT in teaching and learning, some weakness have been discovered. While some staff have placed their courseware on the Blackboard e-learning platform, the facility has not been fully utilised; hence, UDSM is still supporting face-to-face teaching only. The video conferencing facilities are not utilised and are seen as redundant, but they can potentially be expanded to accommodate the delivery of e-learning environments. A contributing factor behind this is the lack of an appropriate model (structure, strategies and resources) that could be used to develop and deliver e-learning programs at UDSM. This shortcoming has led the researcher towards conducting this study to establish an ODeL centre at the University of Dar es salaam to manage and promote distance and e-learning in an appropriate manner.

2.3 Distance Education and e-learning

Distance Education or Distance Learning is a field of education that focuses on pedagogy and technology with the aim to provide education to remote students who are physically not in the same place with their teachers (Wills, 2003), using

technology to communicate during a major part of the learning process (Burke & Slavin, 2000). Distance education can only be distinguished from private study if there is an academic institution to manage, support and accredit the education provided. There should also be technology available that can enable appropriate two way communication between students and teachers who are not located in the same place so that messages sent from one side to the other are delivered with appropriate feedback (Keegan, 1990, p. 44). Distance education is also defined as a type of education where students and teachers are in different locations and electronic or print media is used as a means of communication (Eastmond, 1995); or it may be education that provides learners with resources in the same electronic place to help them learn effectively (Filipczak, 1995).

This research is limited to the investigation of an ODeL centre at the university of Dar es salaam to support and promote the successful implementation of the best e- learning model in the context of Tanzania. Therefore, based on the definitions of distance education provided by various authors and the purpose of this study, the researcher defines distance education as *technology enhanced education that is managed, supported and accredited by the educational institution, to provide education to remote students who are physically separated during the major part of the learning process.*

The distance education landscape in Africa is transforming at a rapid pace and is being driven by diverse economical, technological and social trends. Probably the most important factor of this entire trend is the enormous demand for access to quality higher education (Norman, 2004). It can also be the result of new jobs created by service oriented economies that require higher levels of skills with increased flexibility and ability to deal with the change (Steed, 1999).

According to Steed (1999, p. 6), the need to change education delivery is driven by increasing demands for education, acceleration in the rate of technological change and greater demand for increased productivity. These factors bring on the need for the introduction of e-learning as alternative or complement to face-to-face learning for the purpose of providing quality education while reducing the cost of providing education.

2.3.1 e-learning

e-learning is a type of learning that uses information technology to enable learners to learn at anytime and anywhere. Stockley (2003) defined e-learning as “the delivery of a learning, training or education program by electronic means” (p. 2). He further defines e-learning as a form of education or training that involves the use of a computer or electronic device in some way to provide training, educational or learning material (Stockley, 2003). e-learning is a part of distance learning and online learning as a subset of e-learning (Urdan & Weggen, (2000).

According to Urdan and Weggen (2000), e-learning has three key elements that distinguish it from traditional face-to-face education. These elements are separation of facilitator and the learner during the instructional process, usage of educational media as the means to transfer course content and facilitate the link between the learner and the facilitator, and the three ways communication between facilitator, the Learner and Educational Institution (Urdan & Weggen, 2000).

Through e-learning, content can be delivered to many users through different media, mostly over the Internet or on Intranets. Some people claim that the “e” in e-learning means *electronically* delivered learning. However, the researcher believes that electronic is not a sufficient definition of the “e” in e-learning because in order to exploit the true potential of e-learning, the “e” must also imply *effective* and *engaging* learning. This means that educational institution must provide effective learning that engage learners, relative to other ways of learning. Therefore for the purpose of this thesis, the researcher defines e-learning as: **“Effective and engaging learning that has been designed and delivered by educational institution anywhere at anytime, using information technology.”**

The most important player in the demand for more flexible and effective education systems are learners; therefore, educational institutions have to rethink views and assumptions of the teaching and learning experience and re-conceptualise the profile of these learners as they may impose many challenges as their needs change (Wyatt, 1997). The industrial age model for education is being replaced by

a new paradigm of learning for the 21st century. This paradigm or vision is fundamentally realigned with the need of learners in the information age. Thus, the educational environment has to undergo a technology driven shift of unparalleled proportions (Sangster & Lymer, 1998). Studies have shown that many learners are looking for e-learning because of the features that are provided in course designs, delivery and support, (DiPaolo, 2003). However, the application of technology in e-learning does not change how people learn, it changes the way in which they can be taught; therefore, technology should facilitate the learning process by providing efficient ways of teaching (Horton, 2000).

Every learning environment contains opportunities and constraints for both educators in how they teach and students in how they learn. The opportunities and constraints may change according to the particular variable for each environment. Therefore, the question is whether online learning is as good as face-to-face teaching or vice versa (DiPaolo, 2003).

2.3.3 Opportunities of e-learning

Various authors view e-learning as a viable means of distributing and delivering educational material at distance and residential institutions (Geueke & Stausberg, 2002; Beller & Or, 2003; Katz & Yablon, 2003). This view is due to e-learning's convenience and flexibility of facilitating the learning process as well as the combination of media which increase its scope, range and the effectiveness (Hopey, 1999). Some authors maintain that e-learning can increase students' performance as their commitment increases (Rashty, 2003), and its potential to guide learners in developing skills and methodologies as they engage in independent learning (Ginsburg, 1999). Students who enrol in an e-learning programme communicate with their teachers and fellow students electronically, thus developing communication and interpersonal skills (Ginsburg, 1999, p. 14).

Several studies relating to student-centred e-learning have found this approach very effective as it can promote constructivist views of course design where the learner constructs the knowledge while the role of a teacher is seen as the facilitator, collaborator and mediator (Beller & Or, 2003).

In e-learning, students develop system skills as they have to understand organisational and technological parts of the learning system, and they are also required to find, evaluate and interpret information thus developing information and thinking skills for making decisions, solving problems and knowing how to learn (Ginsburg, 1999; Twing, 1994).

It can be said, therefore, that the skills and competence needed in a knowledge-based society can easily be developed by e-learning (Bates, 2005) provided these skills are not acquired in isolation as they have to be learned in a context where the skills concerned are valued, modelled and assessed (Ginsburg, 1999).

2.3.4 Challenges of e-learning

Challenges may lead to constraints, McMullen (1998, p. 212) is of the view that regardless of the goal, a constraint may prevent a system from accomplishing its goal. Goldratt (1992) describes a constraint as anything that limits the achievement of a system's objectives.

Austin (2002) argued that in e-learning there can be "an imbalance between the output capacity of the infrastructure and the actual student demand" (p. 4), which leads to either surplus or a shortage of capacity, and "if there is a shortage there must be a constraint in the resource system" (p. 4).

Many institutions face the challenge to develop a prioritisation and investment strategy that recognises the evolving mission-critical role of e-learning. Students today expect much more than online access to course materials as they expect online access to both academic and administrative services. The challenge, therefore, is to integrate academic and administrative services on the web presenting a single and personalised point of contact for students, instructors, and other stakeholders.

There is a challenge of organisational communication in most higher learning institutions implemented e-learning. In most cases the strategic intention of the management is not made clear to staff involved in e-learning; responsibility is given to IT experts who are responsible for setting up infrastructure and not to

educational experts who are often not consulted during the initial decision making stage. On many occasions, the person in charge of e-learning is the IT expert and not the educational technologist (Maznah, 2002).

Learning that occurs in e-learning which is referred to as student centered is not always student centred as learning is facilitated through lectures, tutorial and exercises that are controlled by the teacher in their presentation and outcome (Bates, 2005). This, therefore, triggers the need for student centred approach to be applied in course design where learning objectives and outcomes focus on what student will be able to do, rather than on the content being covered by the teacher (UCD centre for teaching and learning, 2005). However, the main challenge with this approach is the amount of time required to develop and maintain e-learning courses as well as failure to estimate how much time is required for e-learning relative to traditional courses.

Outsourcing e-learning course development can be expensive. Involvement of academic staff in the development of e-learning is still optional in most institutions; academic staff are always reluctant to embark on e-learning as the duties required for this activity is in addition to their regular duties, and staff may also lack the required expertise (Maznah, 2000a). In light of these issues, there appears to be the need for a specialised centre to manage and administer e-learning.

2.4 Requirements for e-learning

Requirements for the establishment of e-learning includes standards in the implementation of each element of an e-learning model. Therefore, Institutions wishing to implement e-learning should investigate how e-learning will support their vision and mission. They should also be able to determine its sustainability and the technological infrastructure required so that its implementation costs are justified.

The implementation of e-learning requires experienced academic and other supporting staff to establish and support e-learning with pedagogical choices that

meet the requirements of the subject and the needs of the intended learners (Alexander, 2001, p. 240).

2.4.1 e-learning model

An e-learning model consists of content, technology and support services for learners. These elements are often interrelated and thus become difficult to differentiate between them as e-learning is delivered using technology which is also used to support good learning experiences (Richards, 2002). Richards (2002) argued that a distinction “must be made between what may be referred to as an add-on model of e-learning and a more integrated approach which goes beyond a mere transmission or delivery of content to promote more interactive and effective learning” (p. 31).

An e-learning development model needs to consider pedagogical issues in the creation of e-learning content, the role of the technology in providing content, delivery (access) and support services that will be provided to learners electronically.

2.4.2 Requirement for creation of content

The creation of e-learning content needs to consider the underlying pedagogy, or how learning will take place (Conrad, 2000). The development of content should be based on constructivism, where an effective and meaningful learning process is initiated and directed by a learner who takes an active role. Effective learning is the learning which integrates instructional practices and internet capabilities to direct a learner towards a specified level of proficiency and competency (Conrad, 2000, p. 11). For this reason, therefore, e-learning content design should focus on the need of the learners and present them with the learning objectives so that the materials in the content are logically sequenced to reinforce those objectives (Conrad, 2000).

Meaningful learning occurs when complex ideas and information are combined with students' own experiences and prior knowledge to form personal and unique understandings. Learning is meaningful when the student comprehends the

relationship of what is being learned to other knowledge (Grabe & Grabe, 2007). Therefore, an Instructional design model should be used to provide a framework for meaningful learning environments and possibilities for utilising effective learning strategies that provides a useful tool for developing pedagogically good quality content (Jonassen, 1999.). Many e-learning programs have not succeeded as the learners were not able to adopt e-learning due to the failure of educators to provide them with quality content that create an effective, interactive e-learning experience (Pailing, 2002).

Interactive e-learning content has always focused on multimedia; however, creating purposeful and engaging multimedia content can be enhanced by incorporating the principles of cognitive psychology. Meaningful combinations of appropriate multimedia (text, voice, and picture) can coordinate information processing activities and cognitively improve learning abilities of the learners (Clark & Mayer, 2003).

In order to create dynamic and flexible content the designers may consider utilising learning objects that have the potential to be easily reused and repurposed in different learning environments and contexts. Learning objects, when used appropriately, can increase productivity as well as reducing the cost of creating content (Barrit & Alderman, 2004).

2.4.3 Technical /technology Requirements

e-learning technology encompasses a broad range of applications of technology and refers to using ICT to support the process of learning, to support communication in educational settings, to evaluate learning activities, and to manage resources and create educational materials. ICT developments should focus primarily on how to use technology to create convenient e-learning environments for learners to access learning materials anywhere, anytime in a cost effective way (Bates, 1995). Technology is fundamental to e-learning because it provides a valuable ICT infrastructure to support content, delivery and service. However, requirements for technology should also consider the changing needs of students, the content that is pedagogically sound, and the services required to meet these needs (Daniel,

1996). ICT infrastructure includes everything that supports processing of information; these include hardware, software and the communication protocols. The hardware component includes computers and network equipment. These can be determined by identifying all scenarios appropriate to the institution and by estimating the number of classrooms required for the programme offered and the need for staff access outside the e-learning system (Daniel, 1996).

Software applications for e-learning are commonly known as Learning Management Systems (LMS). These are the specialised learning technology systems based on the internet and web technologies in order to provide education and training in e-learning environments (Avgeriou, 2003). Most LMSs have three types of users including the students, the teacher/tutor and the administrator. They also have the ability to include text, documents and multimedia files (text, video, picture sound), the facility for assessing students' performance, the ability to insert various resources both from the internet and intranet, and a section for frequently asked questions (Avgeriou, 2003, p. 85).

The advances in technology relating to the delivery of e-learning may cause universities to ignore the issues of security and privacy; however, privacy is very important as it allows the learner to maintain and control his/her personal information which is to be shared with others in the learning environment. Therefore, those involved in e-learning should ensure that the technology they implement ensures data integrity and enhances the security; e-learning projects often fail because of ethical and credibility issues (Bates, 2005).

2.4.4 Expertise required for e-learning

In e-learning, special expertise and skills are required so as to fulfil its requirements such as the creation of course content, implementation of appropriate technology as well as provision of support services and security. e-learning combines education and technology; hence, a specific set of competencies is needed by both instructors and technical staff (Stevenson, 2001).

Academic staff engaged in development and delivery of e-learning courses should possess different skills to assume four roles: they should possess pedagogical skills to be facilitators who design educational experiences and communicates with

students for instruction, encouragement, reflection and participation; they should also possess social skills which gives them the ability to provide online communities for students in order to attract their full participation. Another important skill for academic staff is the managerial skills as they have to manage overall course structure arrange students' assignments and manages discussion forums by setting the pace and agenda. As the staff need to assist students with technology and systems, it is necessary for them to have the technological skills (Stevenson, 2001, p. 85).

Staff also require a variety of skills such as instructional design to act as course developers or project managers who provide both technical and pedagogical approaches that are effective in supporting students' independent learning. Other technical and professional staff members such as web programmers and multimedia producers are required to produce multimedia course content. The staffing structure and skills can also include computer technicians to support maintenance of computer hardware and software (Inglis, Ling & Joosten, 2002).

There are two main approaches that can be taken regarding staffing including multi-skilled approach and the specialist approach (Inglis, Ling & Joosten, 2002). In the multi-skilled approach academic staff are trained so that they also possess technical skills required for the development and delivery of courses. This approach has great benefit as academic staff, who are the subject matter experts, are responsible for the technological design and are experts in the materials they are designing (Bates, 2004). A specialist approach requires a wider staffing structure as a number of technical staff are required to perform all technical tasks (Inglis, Ling & Joosten, 2002). The advantage of this approach is that it is difficult to find academic staff who are subject matter experts as well as having mastered the technical skills required in specific areas. A range of staff will depend on the institutional commitment to the creation, production and delivery of e-learning courses (Inglis, Ling & Joosten, 2002).

Staff development and training is a major factor for any institution wishing to deliver e-learning courses as e-learning skills differ from face-to-face. That is, both staff commitment and staff development are required (Collis & Moonen, 2001).

However, obtaining such commitment is not a simple task due to the staffs' numerous existing duties and responsibilities; therefore, staff development events should not only serve to provide staff with the necessary skills and self-confidence, but can also act as a platform for an exchange of staff experiences (Collis & Moonen, 2001). Salmon (2000) argued that, apart from supplying necessary skills, "the online training programme would not only be about acquiring new skills but would also help trainees to explore their attitudes to its meaning for their own teaching" (p. 58). This professional development of staff will give them the opportunity to contribute actively towards a common goal of teaching and learning from one another rather than passive recipients of training.

2.3.5 Required support services

Learning communities should be formed to promote interaction between and among learners, learners and educators as well as learners and content (Palloff & Pratt, 1999).

e-learning has the capacity to support multidimensional forms of communication and interaction which is very important in the learning process. Learning communities where interaction takes place provide the environment where the learner takes control and responsibility of the learning process (Garrison & Anderson, 2004, p. 115).

2.5 Existing e-learning Models

Existing e-learning models implemented by higher learning institutions within developed and developing countries were examined. The researcher investigated implementation of e-learning in Malaysia and Canada.

2.5.1 e-learning in Malaysia

There are 11 public universities, four university colleges, 11 private universities and over 600 private colleges in Malaysia. With the increase in demand for higher education many higher learning institutions in Malaysia have planned for e-learning In order to respond actively to the challenge, while being guided by the strategies, to enhance the use of ICT in teaching and learning created by the Ministry of Education (Alhabshi, 2005). These strategies include the preparation of

sufficient and up-to-date tested ICT infrastructure and equipment to all educational institutions as well as increasing the use of ICT in educational management Hassan (2002).

The Malaysian government recognises that e-learning is one of the important approaches to future education. In Malaysia, there are formal and informal educational programmes which are offered using e-learning mode (Banjunid, 2001). Two universities, University Tun Abdul Razak (UNITAR) and Open University of Malaysia (OUM) are offering full degree programs via the hybrid and blended mode respectively. A growing number of public and private universities throughout Malaysia are also employing e-learning methodologies either to offer academic programs via distance or to support their full time on-campus learners (OUM, 2004).

2.5.2 E- Learning at University Tun Abdul Razak (UNITAR)

University Tun Abdul Razak (UNITAR) was the first private university established to specifically conduct e-learning in Malaysia in December 1997 (Alhabshi, 2005). The university initiated e-learning programmes in a challenging environment in March 1998. Currently, UNITAR has four faculties, four schools, three centres and one institute located in two campuses: Tun Razak City Campus in Kuala Lumpur and Pintar campus in Kelana Jaya. The University also has eight regional e-learning centres. There are 189 academic staff and 206 administrative and technical staff (UNITAR, 2008). The number of accumulated graduates since 2001 is over six thousand. UNITAR is currently used as a benchmark for distance, open and e-learning institutions, particularly in terms of obtaining approval for programs, as well as for accreditation (UNITAR, 2008). The University was awarded a certificate by the International Standard Organisation (ISO) after proving that the quality standards were met.

UNITAR established e-learning with the goal to foster the development of quality human capital while reducing the cost of education. It was also believed that e-learning would not require huge facilities as universities conducted their courses in the conventional mode; therefore, the financial capital required could also be reduced as most of the capital outlay would only be needed for laying the Information Technology infrastructure and equipment. e-learning was also

established to increase enrolment and access to education for remote students in order to provide them with convenience and minimal risk without having to travel to the university (Alhabshi, 2005). Establishment of e-learning started with a list of components that would compliment almost every aspect of the conventional learning such as lectures, tutorials, laboratory experiments, assignments, quizzes, examinations, and so on. For each of these components, an e-learning component was created to replace the component in the conventional approach.

2.5.3 UNITAR e-learning model

Based on the rationale for the establishment of e-learning and government policies, UNITAR prepared the following items as necessary components of its e-learning initiative:

UNITAR established an ODeL centre to take up e-learning activities in the city campus. Due to the needed social interaction for students both with the staff and fellow students, UNITAR established various learning centres around Malaysia to accommodate some face-to-face meetings (Alhabshi, 2005). The policy allowed the establishment of these centres without being classified as university branches or private higher learning institutions, thus making it easier for UNITAR to operate as no separate license was required.

According to Alhabshi (2005), face-to-face tutorials were conducted at the learning centres by qualified tutors to enhance learning of the subject matter. Therefore, learning centres were established at strategic towns, complete with classrooms, computer laboratories, resource centre, recreation facilities and other physical facilities for administrative and social interaction. Students were given the opportunity to select the centre they wished to visit nearest to their homes.

The blended model of learning, including the combination of e-learning and face-to-face teaching and learning, is still being delivered as it was realised that the ICT infrastructure would not be able to fully support a completely virtual university. It was also noted that the level of acceptance of the e-learning concept was still low; only students identified as being very bright, independent and resourceful learners could be catered for (Alhabshi, 2005).

The main ODeL centre located at the city campus is responsible for the development and delivery of e-learning courses and provision of student support services. e-learning at UNITAR includes web based materials as well as multimedia rich interactive courseware that is provided on CD-ROM. The courseware takes the place of lectures as no lectures are delivered at UNITAR. Students go through the material on their own in a timeframe that is convenient to them and thus reducing constraints on physical facilities (Alhabshi, 2005).

Initially the production of e-learning material was contracted out which became very expensive; however this is now done by staff after they have received training conducted over time in a conventional university; the training focused on how to effectively develop and deliver courses in e-learning environment (Alhabshi, 2005).

According to Alhabshi (2005), UNITAR gave enough time for students to build their confidence in university education. For the first two years students were given time to know what to expect through some experience; it is only when they have the confidence, they will be able to experiment with independent learning. A blended or hybrid model implemented in the first two years had a more conventional delivery mode; thereafter, the e-learning delivery mode was gradually increased so that at the end the proportion of e-learning would be almost 100 percent e-learning.

To facilitate e-learning as a whole, UNITAR developed its own Learning Management System (LMS) which is called Virtual Online Instructional Support System (VOISS). The ODeL centre uses an LMS to provide students with information on schedules, assignments, courses and results. Technical support including solving social problems of both students and academic staff is done through the customer Relationship Management which operates on a 24 hour basis. UNITAR is also providing online Tutorial (OLT) which provides real-time communication to students through Voice over internet Protocol (VoIP) technology (Alhabshi, 2005).

Other services offered to e-learning students through the ODeL centre include a library services with over forty thousand books, E-books Electronic journals and databases, which service the needs of students from all over Malaysia.

2.5.4 Challenges faced by UNITAR in the establishment of e-learning

UNITAR faced the following changes during the implementation of e-learning:

Parent and Student Apprehension

Parents and students still want the conventional campus life and could not comprehend why they should study from their own homes, especially if they live near one of the study centres. Some were also concerned about the lack of physical interaction they would have with instructors since they are still not confident with virtual interaction (Alhabshi, 2005).

Difficulties with the learning programmes

It is required by Malaysian law that each higher degree programme must be preceded by an undergraduate programme. For example, a Masters degree in Education can only be conducted if the university has already successfully conducted a Bachelor in Education. e-learning appeals to working people as most of these students are looking for higher degrees (Alhabshi, 2005).

Changing technology

As technology changes, UNITAR needs to review its technological status. The maintenance and upgrade of the technology must be ongoing in order to sustain programs as well as remain innovative (Alhabshi, 2005).

Limitation in time duration

The maximum number of semesters that can be conducted per year or the number of contact hours that must be maintained per semester seems to discourage flexibility in e-learning and life-long learning (Alhabshi, 2005).

Competition with other providers of education

UNITAR is being faced with more competition as all eleven public universities have collaborated to form an open university claiming to offer programs in the same

mode as that of UNITAR at almost half the price. There are also a number of private universities working towards offering on-line education (Alhabshi, 2005).

2.5.5 e-learning in Canada

For the investigation of e-learning in developed countries, the researcher investigated how e-learning was implemented at the University of British Columbia (UBC) in order to investigate a traditional public university with face-to-face and online delivery.

The University of British Columbia is the largest public and one of the oldest universities in Canada located in the province of British Columbia in the city of Vancouver (Bates, 2004). UBC started to offer the first distance learning program in Canada in 1949 mainly to teachers scattered throughout the vast province. New e-learning initiatives started in 1996 by putting all distance education courses online and establishing the Distance Education and Technology Unit established the Distance Education and Technology (DE&T) as the centre for administration, development and production of e-learning courses. The unit is also responsible for providing support services to both e-learning students and facilitators.

Demand for e-learning in Canada has increased as many students are employed and e-learning courses provide them with the flexibility they need to accommodate their work and family commitments. e-learning also helps a number of students who, due to the increase in tuition fees, are forced to seek part-time jobs to help pay for their studies.

UBC offers distance education courses in nine of the twelve faculties. The distance education programs at UBC are available in two main categories: the undergraduate and postgraduate courses. At UBC, undergraduate students must complete at least half of all their courses in 'residence', that is, in-campus classes. Thus, it is not possible to complete a full UBC undergraduate degree by e-learning as graduate certificate and masters programs are aimed at continuing professional education.

2.5.6 Distance Education and Technology Unit

There are approximately 120 to 150 distance education courses available each year across the university. The Distance Education and Technology unit (DE&T), working in collaboration with individual faculties, administers the majority of these courses. The DE&T unit allocates an instructional designer for each course. The instructional designer is a project manager who works closely with subject matter experts appointed from each academic unit offering e-learning courses in the development of online course content. The instructional designer then draws on specialist staff available in the DE&T unit such as web programmers, multimedia producers and IT specialist in production and delivery of courses. The DE&T unit is also mandated to deal with instructional contracts and honorarium and at the beginning of each semester, the DE&T unit organises orientation workshops and training to support new online instructors and provide them with new practices and policies (Bates, 2004).

The DE&T unit is responsible for registration of e-learning students in selected learning programmes and is also responsible in managing students' records and providing them with general policies and advice on e-learning. Other services offered by the DE&T unit to both students and facilitators include help desk support which have a central repository for email requests; the unit is able to provide responses to most inquiries within a day. To ensure quality is maintained, DE&T conducts course evaluation, which is done in collaboration with the unit's research team and instructional designers. The evaluation provides much needed information to faculties and university managers regarding the student experience of studying at a distance (Bates, 2004).

The management of courses is done through the learning management system WebCT. Using this system, students are provided with information on schedules, assignments and results. The system also provides online student advice regarding who to contact for questions related to their academic programs or progress (Bates, 2004).

2.5.7 Challenges faced by UBC

Although UBC successfully implemented e-learning, there are number of challenges faced as identified in the following section:

Difficult to integrate Traditional and e-learning student services

The university integrated student support systems, such as admission, registration, fee payments, library, exam scheduling and student data management, had to meet the requirement of both distance education and on-campus students. However, e-learning students include a professional audience whose needs are different from the needs of other students (Bates, 2004).

Complexity of Instructional designer's job

Due to advances in technology, the instructional designer's job has become complex as they need to keep up with changes in technology and their implications for design and costs. They may have to act as consultants to provide training to lecturers and other university staff in the use of new learning technologies. As the inventory of courses continues to grow, the task of keeping them up to date becomes increasingly difficult (Bates, 2004).

Difficult to retain E- Learning specialists

The DE&T unit encouraged instructional designers to specialise in different technologies due to the complexity of their jobs. This has forced some of them to undertake masters or Ph.D. degrees so they could research specific topics, edit academic journals, and teach about e-learning. At UBC, however, all learning technology staff were considered to be in administrative categories who are less remunerated compared to their importance. Therefore, given increasing opportunities for jobs in other countries and the private sector for such specialists, keeping suitable qualified e-learning specialists was reportedly difficult (Bates, 2004).

Ownership of e-learning courses

The DE&T unit is not an academic unit and cannot offer courses that do not have support from the academic departments. Unless there is support from the academic departments, some courses may be forced to close. This will not only

inconvenience students but will place added pressure on campus-based classes, which are already over-crowded. The DE&T unit receives numerous requests from students for more courses in distance education, particularly in Commerce and Computer Sciences, both for credit and non-credit. Several attempts have been made to encourage the development of distance education programs in these areas. However, the incentives to professors and heads of department to develop distance education courses in these two Faculties appear to be inadequate (Bates, 2004).

2.5.8 DE&T project management model

In order to address challenges faced by e-learning, the DE&T unit created a project management model that provides the university with a number of safeguards, primarily in the area of quality assurance and cost-effectiveness. This project management model ensures that e-learning courses are professionally developed, managed and delivered. In this model academic staff do not waste their time with technical production; academic staff only work closely with technical staff to ensure that the courses designed and developed fully support the students. In this way, e-learning courses are developed with no additional financial demand from the academic units, thus, becoming easier for the university to meet the priorities through the targeted funding. As students are paying for the courses they are enrolled, any profit made are shared with the respective faculties (Bates, 2004).

2.6 Chapter Summary

The literature indicates that there is an increasing need to implement distance education through e-learning as an alternative to the more traditional classroom-based instruction. The demand for skilled workers has been increased due to constant changes in global economies, marketing conditions, and constant innovations in technology. The accommodation of these demands devolves on the educational system. Higher educational institutions should provide education at a distance using e-learning as this mode of learning has the potential to provide the needed learning opportunities for many people throughout society. The literature further indicates that planning for the implementation of a quality and sustainable

e-learning model requires an understanding of ICT in education as well as current teaching and learning practices in order to identify critical success factors that need to be addressed in an e-learning strategy. Establishment of e-learning in any institution is complex and requires an organisation to coordinate all activities. e-learning models will continually emerge as new research findings attempt to develop frameworks to address the challenges. In the strategic planning process these models provide useful tools for evaluating existing e-learning initiatives for determining critical success factors.

Chapter 3 : RESEARCH METHODOLOGY

3.1 Introduction

The aim of this chapter is to report on the approach the researcher adopted to address the research questions. As identified earlier, the key research questions which guided the study are:

- What are the factors and conditions at the University of Dar es salaam and Tanzania that make the development of an ODeL centre relevant to its continuing development as a centre of e-learning?
- What kind of expertise (skills & knowledge) is required by the University of Dar es salaam for the development of an ODeL centre?
- What resources, structures, strategies and policies are required to establish an ODeL centre at the University of Dar es salaam?

The chapter explains how the study was conducted focusing on the design, development and administration of the questionnaire and other instruments. It also provides detailed information on the participants who were surveyed and those who were interviewed. This chapter also explains the methods used for data collection and analysis as well as how the researcher controlled the validity and reliability of the results.

3.2 Research Approach

This study used a mixed method approach of both qualitative and quantitative research in order to address the specific research questions. The researcher employed both quantitative and qualitative approaches which are said to be systematic. In fact, having a system or following a process is a defining principle of research. Quantitative research is "a formal, objective, systematic process in which numerical data are utilised to obtain information about the world" (Burns & Grove cited by Cormack, 1991, p. 140).

The researcher decided to combine both qualitative and quantitative methods so as to get best results that can be relied on. Quantitative are generally focused on

numbers and statistical analysis of collected data. In the quantitative approach it is preferable to isolate the variables, before the data collection takes place. This way there can be a broader and more scientifically valid view of the research project, formalising and structuring the approach to the study questions. With the use of objective methods, the results can be used to build up under other research projects, and this way be applied outside the specific research project (McCracken, 1988).

Qualitative methods are different from the quantitative ones in the sense that they often tend to focus more on the specific study questions. This way it is easier to answer the questions on how and why certain phenomena apply because it explores the richness, depth and complexity of the phenomena. On the other hand, they are usually more subjective and thereby harder to generalise onto other research projects (McCracken, 1988).

Phase One of the study examined the need for an ODeL centre at the University of Dar es salaam, skills and expertise of university staff as well as the online environment and experience for both students and lecturers. Phase Two examined the literature through a content analysis to identify existing models from developed and developing countries and factors and constraints which need to be considered when developing an e-learning Model for the University of Dar es salaam. Phase three analysed the data obtained from phase one and two and suggests an appropriate e-learning model suitable for the University of Dar es salaam.

3.3 Research design

In order to select an appropriate research design the researcher used the theory adopted by Yin (1994) as a guideline. He advocates five different research strategies: experiment, survey, archive analysis, historic analysis and case study. One basic way of differentiating them is to look at which type of questions the methods use when formulating the hypothesis (i.e. what, how, why, how much, etc.). Another way is to see if you can control the setting and the order of actions when doing the research. To check if the focus of the research is present or past could also help one decide which research design to choose. Comparing this

research situation with the different strategies, the researcher found that three data collection methods (questionnaires, interviews and content analysis) were best for this study. This enabled the researcher to attempt some measure of triangulation (i.e. to use multiple methods and data sources) in order to enhance the validity of any research findings (Mathison, 1988).

In addition, the researcher used questionnaires because the analysis of data is easy compared to other methods (Fraenkel & Wallen, 2003). Questionnaires are easy to complete and many people are experienced with questionnaires. Questionnaires will to some extent reduce bias as the researcher can not influence the respondent (Fraenkel & Wallen, 2003). A questionnaire is also an instrument which does not interrupt the respondent as it can be completed in their own time (Creswell, 2002).

The researcher devised interviews in order to obtain more comprehensive responses and clarify any question by probing; a process not afforded to questionnaires (Fraenkel & Wallen, 2003). The interview schedule was semi-structured to elicit data on specific matter but also to explore any emergent related issues. Additional information can be obtained from semi-structured interviews to support concepts in the literature and allow the participant to provide more detailed information (Creswell, 2002).

3.3.1 Phase One

In this phase the researcher designed and administered the survey instruments. Before the design of the instruments, profiles of the key stakeholders were established through an extensive literature review. The following sections describe the survey instrument design and administration processes to key stakeholders (students, university lecturers, technical staff and the university management).

Design of Questionnaires

Three questionnaires were designed for students, academic staff and the management (Appendix A, B and C). The questionnaires were designed based on Don Dillman's (2000) theory which applies the basic rules of user-centred design to the questionnaires. Questionnaires were designed so that they answer the research questions in this study in the context of the University of Dar es salaam. The researcher tried to limit the number of questions and tried to design questions

which built trust and provided respondents with benefits that outweighed the time expended on filling out the questionnaire. Positive language was used to make the respondents feel like collaborators (Dillman, 2000).

The reliability of the questionnaire was estimated by examining the internal consistency reliability test-retest reliability (Intra-class correlation coefficients). The content validity of the questionnaire was examined by the literature review and interviews with stakeholders and through experts' judgments.

Questionnaire A: Student

This questionnaire (Appendix A) was designed to collect data concerning students as the key stakeholders. The researcher designed the questionnaire to obtain the following information:

- Demographic information of the students
- Students' computer and technology usage as well as their internet access for education purposes
- Experience with an online environment
- Students' views about an online environment.

Questionnaires were given to students who attended various lectures during the academic year 2006/2007. The lectures were carefully selected to make sure that no student completed the questionnaire more than once. The researcher made appointments with lecturers and visited classes. Before the lecture started students were informed about the research, in particular making them aware that their participation was purely on a voluntary basis. The students were given ten to fifteen minutes to complete the questionnaires after which they handed them back to the researcher. This process provided a high return rate of questionnaires. Questionnaires were distributed to 1500 undergraduate students of five Faculties of the University of Dar es salaam as follows:

- Faculty of Informatics and Virtual Education (FIVE) – 200 questionnaires
- Faculty of Commerce and Management (FCM) – 400 questionnaires
- Faculty of Arts and Social sciences (FASS) – 400 questionnaires

- Faculty of Education (FED) – 300 questionnaires
- Faculty of Science (FOS) – 200 questionnaires.

Questionnaire B: Academic staff

This questionnaire (please refer to Appendix B) was designed to collect data from academic members of staff at the University of Dar es salaam. The researcher administered this questionnaire to 100 academic staff from the four Faculties namely Faculty of Informatics and Virtual Education (FIVE), Faculty of Commerce and Management (FCM), Faculty of Arts and Social Sciences (FASS), Faculty of Education and the College of Engineering and Technology (COET). Twenty participants were randomly selected from each faculty. From the initial 100 questionnaires that were distributed to the potential participants, 80 questionnaires were returned which resulted in an 80% return rate. Participants were academic staff attended three e-learning workshop organised by the university. The researcher believed that the university had a reason and systematic way of selecting these academics and decided to use the same list. Academic staff members were contacted in their offices and requested to fill in the questionnaires. Some were given the questionnaire and completed them at a more convenient time. Workshops were also a key place used to request academic staff to participate in the study by completing the questionnaire. The questionnaire for academic staff was designed to illicit the following information:

- Demographic information of academic staff;
- Experiences, expertise, their mode of employment as well as level of students they teach and their main teaching area;
- Current usage of ICT by the academics staff in teaching and other activities; and
- Views of academic staff about teaching in an e-learning environment.

Questionnaire C: Management

This questionnaire (please refer to Appendix C) was designed to collect data about the University of Dar es salaam Management. The researcher administered 30 questionnaires to three executive managers, seven top managers and twenty

middle managers. A total of 20 questionnaires from the original 30 were returned (66.7%). The respondents were contacted in their respective offices and requested to fill in the questionnaire after a brief explanation of the research project by the researcher. Most of them were interested in the project as they thought it would add value to the university. Respondents were cooperative; however the return rate was not that high due to their work commitments.

The questionnaire for management was designed to illicit the following information:

- Demographic information about the university management;
- Experiences of the management and their mode of employment;
- Views on the establishment of an e-learning environment at the University of Dar es salaam;
- Their opinions on the issue of capacity development especially developing skills and expertise of staff and the acquisition of financial resources.

Piloting the Questionnaires

The initial questionnaire for students was piloted with 50 students enrolled in AVU Programs, as the researcher avoided UDSM students who might be members of the full study. Four colleagues in the AVU learning centre completed a "trial run" of the questionnaire for academics, and the questionnaire for management was piloted with three Directors. These questionnaires were piloted as the researcher wanted to ensure that the questions were not ambiguous; therefore questions that did not yield usable data were eliminated (Dillman, 2000). The researcher also wanted to test the timeframe required to complete the questionnaires so that this could be factored into the administration process.

The pilot study revealed that the majority of the questions did measure the information it was designed to measure. However, further work was needed, to clarify the factorial structure of the domain being assessed and some close-ended questions needed to be changed to open-ended style questions and vice versa before the instruments could be used.

The questionnaire for students was restructured, which involved interchanging Sections B and C. The sections were interchanged because the researcher

thought of starting with a simple question or questions the respondents could answer without little thought before approaching the more challenging and thought provoking ones. Two questions, 12 and 13, used a rating scale from 1 to 6, which seemed to confuse the respondents; hence, these questions were changed to a five point scale. This also applied to question 7 for management staff. Question 11 in Questionnaire C for management was formulated to ask about the availability of financial resources to establish an e-learning environment. The rating scales in the questionnaire for academics remained (1-6) as the researcher wanted the respondent to make a decision. A five point rating scale enables the respondent to make a neutral response '3'.

3.3.2 Phase Two

The Literature review

In Phase Two, relevant sources dedicated to e-learning and existing models in both developed and developing countries were examined through the literature. The main focus was on models as the researcher investigated their value for developing an e-learning strategy. The purpose of the literature review was to determine factors and constraints needed to consider when drawing up an e-learning Model for the University of Dar es salaam. The literature review addressed the research questions and as far as it is appropriate and possible the questions were investigated within the International, National and Institutional context.

The literature for the study was selected from a wide range of academic Journals and books in the traditional printed format and Electronic Databases. The researcher also examined different documents from the University of Dar es salaam and consulted internet publications from authors, Universities and companies with a strong reputation in the field of e-learning.

3.3.3 Phase Three

Data analysis

In phase three, the researcher analysed data obtained from the Instruments and the literature in order to see whether or not the establishment of an ODeL centre is

viable and to develop an appropriate e-learning model for the University of Dar es salaam.

Interviews

The initial stakeholders (students, university management, lecturers and technical staff) were contacted as they were deemed to be able to authoritatively contribute to a dialogue which formed the qualitative foundation of the project. The interviews permitted enough scope to cover issues directly, incorporating the basic aims and objectives of the project, whilst being intentionally non restrictive.

The researcher conducted interviews so that the results obtained could be compared with the results obtained in the survey to enhance their reliability. Two different types of interviews were conducted: semi-structured and unstructured.

Semi-structured Interviews

Fontana and Frey (1994) presents three different types of interviews; unstructured, semi-structured and structured. The unstructured one uses very general topics, no formal questions and no specific structure for the development of the interview. The structured interview, on the other hand, has a formal structure and pre-written questions. The researcher chose to use the semi-structured interview because it utilises the best features of both the structured and the unstructured interviews. In practice, this means having a clear direction in the interview, while still being informal.

Interviews were devised and conducted after the analysis of the survey data because they allowed the researcher to gather data which provided a deeper understanding of what each person feels, thinks, believes and knows about the phenomenon in question. In his book "The long interview", McCracken (1988) emphasises two important factors when holding interviews, *time scarcity and concern for privacy*. Interviews mostly concern factors outside the private sphere, but it was important to obtain secure contact with the interviewee, time scarcity was also an important factor to remember. The interviews lasted about an hour for each participant.

To obtain views from all respondents, the researcher developed a set of interview guides (see appendix D). They had main questions with sub-questions, followed by some leading questions to ask the interview participants after they had talked about the main ones. This way the researcher wanted to ensure that the interviewee kept to the agenda and stayed focused on the content of their answers. The researcher interviewed 20 technical staff who deal with ICT and teaching, 10 academic staff, 6 managers and 120 students who formed five focus groups based on their faculties. All these interviews were conducted in the period of two months.

The interviewees were informed of the parameters of the project and received a document (Appendix D) in advance. The document served as a basis for questions in the interviews for the students. The preferred method was initially that of focus groups, with simultaneous interviews with groups of students of whom had shown an interest in a follow up interview (indicated in their questionnaire). These students were contacted and were informed about the interview date, time and venue.

By undertaking the semi-structured interviews (Appendix D) in a conversational manner and asking open-ended questions, the interviewees could guide the interview to an extent. This meant that they could answer with appropriate detail that the researcher could either follow up for clarification or an alternative line of questioning taken if the direction became irrelevant. Where a new potential interviewee was referred to, or recommended, they were contacted as necessary in the same manner as the initial interviewees. If the interviewees had no objection the interviews were recorded, but in addition, notes were taken during all interviews. The recording of the interviews were played-back and supplementary notes were added to the field notes made during the interviews.

Unstructured interviews

The researcher also conducted unstructured interviews with experts in the area of ICT. The experts were from the Tanzania Telecommunication Company Limited (TTCL) and from the Vodacom (Tanzania) Ltd. There were no specific instruments or interview schedules used. The researcher arranged meetings with the experts in

order to discuss certain topics regarding ICT trends in Tanzania and its prospects which may be useful to consider in the e-learning planning process. The researcher conducted unstructured interviews to allow input from these experts into the research agenda (McCracken, 1988). Notes were taken but the interview responses from the subjects were recorded in order to reduce bias. However, the interviews were time consuming compared to the semi-structured interviews and the information collected was not uniform.

3.4 Sampling

A purposive sampling method was adopted. Purposive sampling is a sampling technique where the researcher uses special knowledge or expertise about a specific group to select subjects who represent a population (Berg, 2004). The selection of subjects to participate in the study was based on identified variables as the aim is to select information rich cases for in-depth analysis related to central issues of the study. Since it was not possible, nor necessary, to collect information from the total population, a smaller subgroup of the target population or a sample was selected for the purpose of study. The researcher believed that this sampling strategy accurately represented the patterns of the target population. The main purposes of this sampling related to economies on the resources required for collecting and managing the data from a smaller sub-group and improving the quality of data by focusing on a smaller group.

3.5 Participants

The participants have been identified within each phase in the research design. The following table (Table 3.1) provides a summary of the participants involved in this study and the corresponding data collection method.

Table 3.1 Summary of study participants

Phase	Participants	Instrument
ONE	Students of UDSM (N=1420)	Questionnaire A
	UDSM Academic staff (N=80)	Questionnaire B
	UDSM Management (N=20)	Questionnaire C
THREE	Students of UDSM (N=200)	Semi structured Interviews
	UDSM academic staff (N = 10)	Semi structured Interviews
	UDSM Technical staff(N=20)	Semi structured Interviews
	UDSM Management (N = 6)	Semi structured Interviews
	ICT Experts (N=4)	Unstructured interview

3.6 Data Collection Methods

Three questionnaires were used to collect data (see appendix A, B and C). One of the items in the questionnaires required participants to identify whether they would be interested in a follow-up interview. Those who were interested in participating in a follow-up interview were required to provide their contact details. The researcher selected and contacted participants who provided their contact details for an interview. Individual interviews were conducted with university management and technical and academic staff. The interviews for the student focus groups were also conducted.

Participants who participated in the follow-up interviews formed a sub-sample of the original cohort involved in the survey. These participants were interviewed as part of Phase three of the study. The researcher also arranged and conducted four unstructured interviews with the ICT expert. Interviews enable the researcher to develop a deeper understanding of the issues being explored that could not be obtained with the questionnaires.

3.7 Data Analysis

The quantitative data collected from the survey instrument was analysed using the Statistical Package for Social Sciences (SPSS). Descriptive statistics including

frequency counts, mean scores and standard deviation were calculated. As for the analysis of the open-ended questions identified in the survey and semi-structured interviews, the researcher reviewed the responses and categorised them into a set of broad categories. The proportion of respondents' answers for each category of each question was calculated and a conclusion was drawn from the results.

For the content analysis, the researcher identified concepts present in a given text or set of texts. All reference points were categorised and systematically coded according to their concepts. Relational analysis was adopted to look for semantic or meaningful relationships (Palmquist, Carley & Dale, 1997). A reliable content analysis allows inferences to be made from the text.

3.8 Validity and Reliability

Validity refers to the appropriateness, meaningfulness and usefulness of inferences researchers make based on the data they collect while reliability refers to the consistency of these inferences over time, location and circumstances (Fraenkel & Wallen, 2003). As the study used three instruments to collect data its validity is thereby enhanced. There were cross-reference checks between the survey and questionnaire data for each respondent. Selected participants in the study were asked to review the survey report. Reliability could also be obtained by dividing the original sample into two equal sample groups to compare consistency of data obtained from one sample group to that of another.

To ensure validity in content analysis, the researcher considered representativeness of sample text for generalisation and ensured the content measurement (coding) is correct.

The goal of the content analysis was to identify and record relatively objective characteristics of messages to enhance reliability (Neuendorf, 2002). Two coders were used to establish inter-coder reliability. Coding was done independently using statistical tools and figures for each variable which were calculated and compared.

3.9 Ethical issues

The ethical issues that needed to be addressed in this study concern the protocols used in the survey and interview phase as well as those associated with confidentiality, permission, and privacy.

3.9.1 Consent

Normal protocols as approved by the Ethics Committee at Curtin University of Technology were followed for the identification, selection of participants and conduct of interviews and surveys. In particular, all potential participants in both the survey and interview phase of the research project were provided with an explanation of the aims and methods of the project. This was done by giving them a project information sheet to read and allowing them to ask any questions they may have had to the researcher (see appendix E). Their participation was voluntary. Prior permission from the various Heads of Departments at the University was obtained before any staff member was asked to participate. Interview participants were asked to sign a consent form (see appendix F). They were also shown their interview transcript and given the opportunity to amend any of their statements.

3.9.2 Confidentiality

The survey participants were given the option to identify themselves, as some wanted to participate in a follow up interview if required. Otherwise, the survey was completed anonymously and no personal information was requested other than age. Descriptions identifying those who participated in the interview were removed from published data.

3.9.3 Data Storage

All original data (surveys, interview tapes and transcripts, content analysis notes) are kept in a secure place for at least five years by the researcher. These data are in the form of hardcopies of documentation as well as electronic sources, stored on computer disks. The data is clearly labeled for easy access.

3.10 Chapter Summary

This chapter has provided the methodology used for this study. It described how both qualitative and quantitative approaches were used appropriately in order to address the research questions. Furthermore, the design of the three data collection methods (questionnaire, literature review and interview) was described. This chapter also described how the validity and reliability of data collected were enhanced by using and comparing three data collection methods, and ensuring text generalization and coding in the content analysis was correct. Ethical protocols associated with permission, confidentiality and privacy were also addressed. The following chapter (Chapter Four) presents the results of the study as they emerged from the application of each instrument.

Chapter 4 : RESEARCH RESULTS

4.1 Introduction

As noted earlier, the aims of this study is to establish whether there is a need for an Open Distance and e-learning Centre at the University of Dar es salaam and if so, identify the structures, resources, strategies and policies that need to be implemented for the development and sustainability for such a Centre. This chapter presents the results obtained from this research, a process which has been guided by the initial research questions. The data were collected using questionnaires and interviews. The data collected were based on the following main categories;

- Students attending the University of Dar es salaam – their profile and knowledge on the use of media and technology.
- Academic staff – their knowledge and skills on technology and e-learning.
- Management of the University of Dar es salaam – their knowledge on e-learning, concerns and initiatives on the implementation and the use of technology in Education.
- Technical staff of the university – their knowledge and skills on ICT, expertise and how they could facilitate learning using the technology.
- Experts in the area of ICT – ICT trend in Tanzania and ICT issues that need to be considered when implementing e-learning.

4.2 Results obtained from the questionnaires

4.2.1 Questionnaire A: Student

From the 1500 distributed questionnaires, a total of 1420 questionnaires were returned, which resulted in a response rate of 94.7 percent. Table 4.1 provides the demographic information of the students who participated in the research. The questionnaires returned were as follows:

- Faculty of Informatics and Virtual Education (FIVE) – 185 questionnaires were returned out of 200 which is equal to 92.5%

- Faculty of Commerce and Management (FCM) – 387 questionnaires were returned out of 400 which is equal to 96.75%
- Faculty of Arts and Social sciences (FASS) – 375 questionnaires were returned out of 400 which is equal to 93.75%
- Faculty of Education (FED) – 293 questionnaires were returned out of 300 which is equal to 97.67%
- Faculty of Science (FOS) – 180 questionnaires were returned out of 200 which is equal to 90%
- Total questionnaire returned were 1420 out of 1500 distributed questionnaires which is equal to 94.67%

Table 4.1 Demographic information of students

		FIVE	FCM	FASS	FED	FOS	TOTAL
Number of Students		185	387	375	293	180	N=1420
Characteristics		Percentages (%)					
Age	17-24	50.2	49.4	48.2	10.3	49.8	41.2
	25-30	36.3	20.6	38.3	19.3	36.7	29.1
	31-35	10.3	21.5	10.3	52.5	10.3	21.9
	Over 36	3.2	8.5	3.2	18.4	3.2	7.8
TOTAL		100	100	100	100	100	100

Table 4.1 above indicates that, during the time this study was conducted, the university had students enrolled of all ages, and 41.2% of all students in the first age group were between 17 and 24 years of age. However, when comparing student ages in all faculties, it can be seen that more than half of the students in the Faculty of Education (FED) were adult learners aged from 31-35 (52.5%) and over 36 years (18.4%). Table 4.2 below shows the surveyed students' computer and internet usage for educational purposes.

Table 4.2 Computer and internet access and usage for educational purposes

Questionnaire		FIVE N=185	FCM N=387	FASS N=375	FED N=293	FOS N=180	TOTAL N=1420
6. Do you have computer facilities at home?		Percentages (%)					
	YES	17.3	4.9	8	4.1	5	7.2
	NO	82.7	95.1	92	95.9	95	92.8
	TOTAL	100	100	100	100	100	100.0
7. Where do you normally access the internet	Mainly at home	0.5	0.3	0	0.0	0.6	0.2
	Mainly at the university	91.9	82.2	89.9	87.4	92.8	87.9
	Both at home and at the university	4.9	15.5	0	0.3	0.0	4.9
	Internet café	2.7	2.1	10.1	12.3	6.7	7.0
	TOTAL	100	100	100	100	100	100.0
8. In a typical week, how often do you use the internet for educational purposes?	Everyday	5.4	0.8	0.4	0.0	0.5	1.1
	3-5 times a week	35.1	27.2	20.2	9.6	8.4	17.6
	1-3 time a week	59.0	47.0	32.0	38.0	48	42.9
	Not even once a week	0.5	36.8	47.4	52.4	43.1	38.4
	TOTAL	100	100	100	100	100	100.0

The questionnaire reveals that only 7.2% of the students had access to computer facilities in their homes. The number decreases to only 0.2% of those students who could access the internet in their homes. Table 4.2 shows that 87.9% of students mainly access the internet at the university. The study shows that although many students can access the computer and the internet using university facilities, their internet usage for educational purposes is very low with the majority (42.9%) accessing 1-3 times a week, followed by 38.4% not even once a week. The questionnaire asked the students to identify their experiences with online environments. Table 4.3 represents data from questions 9-11 of the questionnaire regarding student's experience with the course management system (Blackboard).

Table 4.3 Experiences with Blackboard

Questionnaire		FIVE N=185	FCM N=387	FASS N=375	FED N=293	FOS N=180	TOTAL N=1420
9. Were you introduced to Blackboard at the beginning of your course?	Percentages (%)						
	YES	15.0	10.0	3.7	1.0	1.1	6.1
	NO	85	90	96.3	99	98.9	93.9
	TOTAL	100	100	100	100	100	100
10. In a typical week, how often do you use Blackboard?	Not even once	96	98	99	99	98	98.2
	Once a day	0.0	0.0	0.0	0.0	0.0	0.0
	Twice a week	0.0	0.0	0.0	0.0	0.0	0.0
	More than twice	0.0	0.0	0.0	0.0	0.0	0.0
	Just before the examinations	3.8	2.0	1.0	1.0	2.0	1.8
	TOTAL	100	100	100	100	100	100
11. Which Blackboard facilities do you use	Discussion forum	0	0	0	0	0	0
	Email	0	0	0	0	0	0
	Chat	0	0	0	0	0	0
	Notes	100	100	100	100	100	100

The data reveals that many of the students did not have any experience with online learning through Blackboard. More than 90% of the students (93.9) were not introduced to the existing learning management system at the beginning of their courses. The data indicates that 98.2% of students were not using the existing learning management system. The data also indicates that students used Blackboard only to access notes prior to exams. Students' views about e-learning were obtained through question 13 of the questionnaire, *With the advent of the new technology (computers, internet, etc) the area of education is undergoing a revolution. What do you as a student want the new changes to bring to you?* Table 4.4 reveals their responses. Students were asked to select from a range of responses.

Table 4.4 Students' views of e-learning environments

13. What do you as a student want a new change to bring?	FIVE N=185	FCM N=387	FASS N=375	FED N=293	FOS N=180	TOTAL N= 1420
	Percentages (%)					
More individual responsibility	2.7	1.8	2.7	2.7	2.8	2.5
More input from the Lecturers	37.8	43.9	45.3	41.0	38.9	42.3
24 hours /7 day classes (Learn anytime, anywhere)	27.0	33.6	37.3	27.3	27.8	31.7
Different modes of teaching /learning	21.6	15.5	8.0	17.1	16.7	14.8
More on-line courses	10.8	5.2	6.7	11.9	13.9	8.8
TOTAL	100	100	100	100	100	100

Table 4.4 shows that 42.3% of the surveyed students think that an e-learning environment will enable more input from lecturers, and 31.7% believe that students will be able to access classes anywhere and anytime. Interestingly, 2.5% realised that they may have to be more responsible for their own learning in such an environment. Table 4.5 presents the results obtained from question 14 of the questionnaire.

Table 4.5 Pedagogical point of view on e-learning

14. What do you expect from the pedagogical point of view from an e-learning course?	Faculty					
	FIVE N=185	FCM N=387	FASS N=375	FED N=293	FOS N=180	TOTAL N= 1420
Clearer explanations of course material using multimedia	42	42	45	49	45	44.7
Learning from home	11	10	8	20	9	11.5
Learning at own pace	28.6	18	20.3	22	24	21.5
Communication with instructor electronically	13.5	22	18.7	5	16	15.8
Communication with other students electronically	4.9	8	8	4	6	6.5
TOTAL	100	100	100	100	100	100

As shown in Table 4.5, question 14 of the student questionnaire shows that 44.7% of all students thought that the e-learning material will be clearer due to the inclusion of multimedia. The data reveals that studying from home was only important to 11.5%, while 21.5% believed that such an environment would enable them to study at their own pace. Only 6.5% considered e-learning would enhance their ability to communicate with fellow students, while 15.8% considered communicating with their instructors. Table 4.6 provides the student data for question 15 regarding the option of completing their course online.

Table 4.6 Students preferences of e-learning

15. Given the opportunity would you like to complete your course online?		FIVE N=185	FCM N=387	FASS N=375	FED N=293	FOS N=180	TOTAL N=1420
		Percentages (%)					
YES	85	79	80	84	77	80.7	
NO	15	21	20	16	23	19.3	
TOTAL	100	100	100	100	100	100	

The data reveals that 80.7% of the respondents would like to complete their course online. Interestingly, even though 80.70% (Table 4.6) said that they like to complete their course online, 79.2% would prefer to study partially online (blended learning – involving both face to face and online instruction).

Part of question 15 (*Given the opportunity would you like to complete your course online?*) of the student questionnaire asked the students to justify their response to why they selected 'yes' or 'no'. A total of 274 students (19.3%) said 'no' to this question. A summary of the responses are listed as follows:

- No computer facilities at home
- e-learning seems to be very expensive
- e-learning requires mastery in technology first
- Prefer physical university environment
- Access to the internet is very limited

Table 4.7 provides the responses made by each faculty to the open-ended question to number 15.

Table 4.7 Reasons for not wanting to participate in e-learning

15. Why? _____	Faculty					
	FIVE N=28	FCM N=81	FASS N=75	FED N=47	FOS N=43	TOTAL N= 274
	Percentages (%)					
No computer facilities at home	35.7	49.4	50.7	31.9	46.5	44.9
e-learning is very expensive	39.3	24.7	13.3	8.5	14.0	18.6
e-learning requires mastery in technology first	0.0	9.9	26.7	17.0	23.2	16.8
Access to the internet is very limited	25.0	16.0	9.3	42.6	16.3	19.7
TOTAL	100	100	100	100	100	100

Table 4.7 shows that 44.9% of the respondents who indicated that they did not want to complete their course online identified the reason behind their decision was due to not having access to computer facilities at home, while 18.6% believe that e-learning is very expensive and 19.7% said they had very limited access to the internet. Question 16 (Table 4.8) also followed this same line of questioning.

Table 4.8 Study Preference

16. Given the choice how would prefer to study		FIVE N=157	FCM N=306	FASS N=300	FED N=246	FOS N=137	TOTAL N=1325
		Percentages (%)					
	Online	4	0	0	8	0	2.3
Partial online (blended)	81	80	81	76	77	79.2	
Face to face	15	20	19	16	23	18.6	
TOTAL	100	100	100	100	100	100	

When asked to give their opinions about working in an online environment, 856 students (60.3%) who participated in the research gave a variety of responses to this question which have been summarised as follows:

- e-learning enables communication with instructors and fellow students electronically and hence reduce travel time
- e-learning helps students have access to a lot of materials worldwide
- e-learning provides students experience with the technology
- e-learning allows studying at own pace and own time

Table 4.9 presents the breakdown of each of the items identified above for each faculty.

Table 4.9 Students' opinion on e-learning

17. What is your opinion about working in an online environment?	Faculty					
	FIVE N=100	FCM N=180	FASS N=256	FED N=200	FOS N=120	TOTAL N= 856
Responses	Percentages (%)					
Easy Communication with students and Instructors electronically	10	13.3	12.5	15	16.7	13.6
Access to a lot of material world wide	45	44.4	59.4	50	45.8	50.5
Provides students experience with technology	30	25.6	18.8	20	25.0	22.7
Allow studying at own pace and time	15	16.7	9.3	15	12.5	13.3
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

Table 4.9 shows that approximately half of the students (50.5%) who responded to this question indicated that e-learning can help students easily access a large range of materials world wide, while only 13.3% realised that studying online enabled them to study at their own pace.

4.2.2 Questionnaire B: Academic Staff

A total of 80 (80%) questionnaires were returned from the 100 questionnaires sent to academic staff. Table 4.10 provides the background information of academic staff who participated in this research study.

Table 4.10 Demographic information of Academic staff

		FIVE	FCM	FASS	FED	COET	TOTAL
Number of academic staff Participated N= 80		18	30	10	12	10	80
Characteristics		Percentages (%)					
Age	25-30	11.1	6.7	10	0	0	3.75
	31-35	16.7	10	20	16.7	0	11.25
	36- 40	27.8	30	30	41.7	40	32.5
	41- over	44.4	53.3	40	70.4	60	52.5
	TOTAL	100	100	100	100	100	100
Experience	0.5 yrs	16.7	3.3	20	0	0	7.5
	6-10 yrs	16.7	13.3	10	25	30	17.5
	11-15 yrs	22.2	33.3	30	33.3	30	30.0
	16-over	44.4	50.1	40	41.7	40	45
	TOTAL	100	100	100	100	100	100.0
Mode of employment	Permanent (full time)	83.3	83.3	100	100	100	90.0
	Contract (full time)	5.6	0	0	0	0	1.2
	Part time	11.1	16.7	0	0	0	8.8
	TOTAL	100	100	100	100	100	100
Gender	Male	78.8	66.7	80	75	90	75
	Female	22.2	33.3	20	25	10	25
	TOTAL	100	100	100	100	100	100

The data reveals that more than 90% of the academic staff members of the University of Dar es salaam who participated in the questionnaire were full time and permanent employees, with 75% being male. More than 40% had more than ten years of experience in teaching at the university. However, the age of many

experienced academic staff was more than 40 years. The following table (4.11) presents the main teaching areas of the academic staff and their positions.

Table 4.11 Positions of Academic staff

		FIVE	FCM	FASS	FED	COET	TOTAL
Number of academic staff Participated N= 80		18	30	10	12	10	80
Questionnaire		Percentage (%)					
5.Position	Assistant Lecturer	50.0	46.2	20.0	16.7	10.0	35.0
	Lecturer	38.9	30.8	30.0	13.3	20.0	31.3
	Senior Lecturer	11.1	15.4	30.0	33.3	30.0	21.3
	Associate Professor	0	7.7	20.0	16.7	40.0	12.5
	TOTAL	100	100	100	100	100	100

Table 4.11 shows that the surveyed academic staff members from the University of Dar es salaam range from Assistant Lecturer through to Associate Professor level. Many of the Professors are located at the College of Engineering and Technology (COET). Overall, however, Assistant Lecturers comprises 35% of all the academic staff surveyed. Table 4.12 below shows the concentration of academic staff in each teaching area.

Table 4.12 Main teaching area of academic staff

Questionnaire		Frequency	Percentage (%) N=80
6.Main teaching area	Engineering	10	12.5
	Education	12	15.0
	Social sciences	6	7.5
	Computer Science & IT	10	12.5
	Business studies	30	37.5
	Economics	4	5.0
	Electronics and Telecommunication	8	10.0
	TOTAL	80	100

The data from Table 4.12 shows that 37.5% of academic staff members who participated in the study are teaching business studies, 12.5% teach computer science and IT, and 15% teach education. The following Table 4.13 shows the levels of the students that were taught by the academics and the mode of teaching that was utilised.

Table 4.13 Level of students taught by the academic staff

Questionnaire	Responses (N= 80)	Frequency	Percentage (%)
9. Which level of students do you teach?	Undergraduates	80	100
	Postgraduate	42	52.5
10. Which mode do you utilise in your teaching?	Lecture	80	100
	Workshop	32	40
	Tutorial	60	75
	Laboratory	5	6.3

The study shows that all academic staff members have taught undergraduate students and 52.5% teach both undergraduates and postgraduate students. All academic staff members that were surveyed used lecture mode in their teaching. Only 6.3% use a laboratory while 75% used both lecture and tutorial and 40% used tutorial. Table 4.14 the computer by the academic staff.

Table 4.14 Computer usage by the academic staff

Questionnaire	Responses (N= 80)	Frequency	Percentage (%)
11. Do you use computer	YES	80	100
	NO	0	0
	TOTAL	80	100
12. Where do you mostly use computer?	At home	34	42.5
	At work	46	57.5
	TOTAL	80	100

The data shown in Table 4.14 shows that all the academic staff members used computers. However, more than half (57.5%) used computers at work while 42.5% at home. Question 13 of the questionnaire for academic staff asks the respondent to characterise their attitude toward ICT in teaching. Table 4.15 shows their responses.

Table 4.15 Attitude toward ICT in teaching

Questionnaire	Responses (N= 80)	Frequency	Percentage (%)
13. How do you characterise your attitude toward ICT in teaching?	Very Enthusiastic	26	32.5
	Enthusiastic	48	60
	Not at all Enthusiastic	0	0
	Too little experience to form opinion	6	7.5
	TOTAL	80	100

Table 4.15 above shows that 32.5% of academic staff characterised themselves as being very enthusiastic towards ICT in teaching, 60% as enthusiastic and 7.5% claimed that they were unable to form an opinion as they have had very little experience with technology. Interestingly, none of the academic staff selected 'Not at all enthusiastic'. Table 4.16 shows how academic staff uses ICT and the frequency of use.

4.16 Usage of ICT for academic staff (N=80)

14. How often do you currently use ICT in:	Percentages (%)			
	Daily	Weekly	Monthly	Never
Classroom teaching	25	34	35	6
Communicating with colleagues	95	5	0	0
Assessment	0	0	40	60
Record keeping	40	20	25	15
Tracking student progress	0	4	76	20
Workshop	0	0	60	40
Feedback communication with students	0	0	0	100

Table 4.16 shows that 95% of the surveyed academic staff members used ICT daily to communicate with their colleagues. However, none of them used ICT to communicate feedback with their students. Interestingly, 25% used ICT (mainly power point presentation software) on a daily basis in their classroom teaching, while 34% on a weekly basis. The following Table 4.17 indicates the level to which academic staff in this study were satisfied with the ICT support provided.

Table 4.17 Satisfaction with ICT support

Questionnaire	Responses (N= 80)	Frequency	Percentage (%)
15. How satisfied are you IT support?	Satisfied	25	31.25
	Not satisfied	52	65.0
	Very satisfied	3	3.75
	TOTAL	80	100

Table 4.17 shows that 65% of the surveyed academic staff members were not satisfied with the ICT support provided to them; however some (3.75%) were very satisfied. The following Table 4.18 shows the training attended by academic staff members to improve their technology skills and their level of satisfaction with the training they received.

Table 4.18 Technology courses attended by academic staff

Questionnaire	Responses (N= 80)	Frequency	Percentage (%)
16. Have you attended any course designed to improve your technology skills?	YES	60	75
	NO	20	25
	TOTAL	80	100
If yes specify	Using backboard	18	30
	Computer Applications	30	50
	Teaching methods	12	20
	TOTAL	60	100
17. How satisfied were you with the course designed to improve your technological skills?	Not satisfied	14	23.3
	Satisfied	27	45.0
	Very satisfied	19	31.7
	TOTAL	60	100

Table 4.18 shows that 75% of academic staff members had attended courses to improve their technology skills; 30% of them were taught how to use the existing LMS (Blackboard), 50% attended courses on computer applications; and 20% attended courses on teaching methodologies. However, some academic staff (23.3%) were not satisfied with the training provided, while 45% were satisfied. Table 4.19 shows the responses to the statements provided.

Table 4.19 ICT in teaching and learning

Questionnaire	Responses (N=80)				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
18. I am likely to use technology in my teaching if I:	Percentages (%)				
Collaborate on using information technology with colleagues who teach in my area	0.0	0.0	17.5	50.0	32.5
Had access to more computers in my class	0.0	0.0	0.0	62.5	37.5
Received more technology training	0.0	0.0	0.0	56.3	43.7
Had up to date information on best usage of technology in my area	0.0	0.0	0.0	62.5	37.5
Had access to the internet in my teaching room	2.5	8.0	0.0	55.0	34.0
Got more technical support	0.0	0.0	2.5	35.0	62.5
Felt more comfortable with the technology itself	0.0	0.0	22.0	43	15.0
Had access to more up- to-date equipment	0.0	0.0	18.8	27.5	53.0
Had more time to learn about using technology effectively	2.5	0.0	37.5	50.0	10.0
Saw a proven need for technology in my area	0.0	0.0	30.0	37.5	32.5

Table 4.19 shows that 62.5% of the surveyed academic staff strongly agreed that they were willing to use technology in their teaching if they were able to get more technical support, 53% strongly agreed if they had access to more up to date equipment, 43.7% strongly agreed if they received more training on technology and 37.5% strongly agreed if they had access to computers in classrooms. This result might indicate that training on how to use technology is important. Question 19 of the questionnaire asked the respondents to identify how they felt about working and teaching in an online environment. Table 4.20 shows the academic staff members' responses to the question of how they feel about working and teaching in online environments.

Table 4.20 Academic staff views of teaching online

19. How do you feel about working and teaching in an online environment	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Keeping up with technology is important to me	0	0	0	60	40
Teaching online is rewarding and enjoyable	0	0	40	50	10
Teaching online helps to increase student's motivation and participation	0	0	20	60	20
Using internet for learning gives students a feeling of being an active class member	0	0	10	40	50
Using internet for teaching allows lecturers to find out about new practices that may be used or adapted	0	0	20	60	20

Table 4.20 above indicates that 60% of the academic staff agreed that teaching online will help them keep up with the technology and increase their students' motivation. However, 40% remain neutral when it came to feeling that teaching online is rewarding and enjoyable. The following Table 4.21 identifies factors that prevented academic staff from making greater use of technology in their teaching.

Table 4.21 Factors preventing greater use of technology

20. Did the following factors prevent a greater use of technology in classroom?	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Unreliable network	0	0	2	40	58
Insufficient equipment	0	0	4	45	51
Lack of electronic course content	0	0	0	5	95
Time to prepare material	0	0	3	67	30
Resistance to change	0	0	20	57	23
Lack of students ICT skills	0	0	6	68	26
Lack of support and guidance	0	0	1	4	95

The results shows that 95% of the surveyed academic staff strongly agreed that the lack of electronic course content and lack of support and guidance were the main factors preventing their use of technology in classrooms at their Faculties. The final question in the questionnaire asked the respondents to identify *if the course you are teaching is to be offered online will you be able to adapt?* Table 4.22 shows their responses to this question.

Table 4.22 Can academic staff adapt to e-learning?

Questionnaire	Responses (N= 80)	Frequency	Percentage (%)
21. If the course you are teaching is to be offered online will you be able to adapt?	YES	77	96.25
	NO	3	3.75
	TOTAL	80	100

The results presented in Table 4.22 above show that 96.25% of academic staff members were ready to adapt to teaching their courses online. The question also had an open-ended component asking them to justify their responses; however, all academics did not give the reason why they indicated either ‘YES’ or ‘NO’

4.2.3 Questionnaire C: Management

From the 30 questionnaires distributed to management, 20 were returned. This resulted in a response rate of 66.7%. Table 4.23 below provides some background information of the participants.

Table 4.23 Demographic information of Management

No of respondents (N= 20)		Frequency	Percentage (%)
Age	25-30	0	0
	31-35	0	0
	36- 40	6	30
	41- over	14	70
	TOTAL	20	100
Years working at UDSM	0.5 yrs	0	0
	6-10 yrs	0	0
	11-15 yrs	8	40
	16-over	12	60
	TOTAL	20	100
Mode of employment	Permanent (full time)	20	100
	Contract (full time)	0	0
	Part time	0	0
	TOTAL	20	100
Gender	MALE	14	70
	FEMALE	6	30
	TOTAL	20	100

The data shows that 70% of the management participants were over 41 years of age. It also shows that 60% of the management had more than 16 years of experience at UDSM. However, females management positions are few (30%). The results also revealed that those in management positions are full time employees of the University. The data for question 7 of the management questionnaire is represented in Table 4.24.

Table 4.24 Management views on e-learning environment

Questionnaire	Responses	Frequency	Percentage (%)
7. With the advent of the new technology (computers, internet, etc), the area of education is undergoing a revolution. What do you want the new changes to bring this institution? (select most important)	More individual responsibility	0	0
	More input from the Lecturers	0	0
	24 hours /7 day classes (Learn anytime, anywhere)	5	20
	Different modes of teaching /learning	9	45
	More on-line courses	7	35
	TOTAL	20	100

The survey shows that 45% of management indicated different modes of teaching and learning to the University as the most desired change, while 35% thought that it is important for the University to have more online courses. Interestingly, 20% thought about the prospect of greater flexibility. The internet usage by management staff who participated in this survey is identified in Table 4.25.

Table 4.25 Management usage of the internet

Questionnaire	Responses	Frequency	Percentage (%)
8. In a typical week, how often do you use the internet for educational purposes?	Everyday	8	40
	3-5 times a week	12	60
	1-3 time a week	0	0
	Not even once a week	0	0
	TOTAL	20	100

The results show that 40% of the management surveyed used the internet everyday and the others (60%) used the internet 3 to 5 times a week.

Question 9 of the questionnaire asked the management group to give their opinions about the establishment of e-learning at the University. The participants provided the following key responses:

- e-learning will increase enrolment
- e-learning will reduce constraints in physical facilities
- e-learning will allow students outside the country to enrol in UDSM programmes easily
- e-learning will reduce cost of teaching if the enrolment number is increased
- e-learning will require big investment.

The frequency of most important response is elaborated in Table 4.26.

Table 4.26 Management opinion on e-learning

Questionnaire	Responses	Frequency	Percentage (%)
9. What is your opinion about establishment of e-learning courses in this University?	Increase enrolment	8	40
	Reduce constraints in physical facilities	3	15
	Allow outside to enrol easily	2	10
	Reduce cost of teaching	1	5
	Requires big Investment	6	30
	TOTAL	20	100

The results shown in Table 4.26 indicate that opinions of the management group regarding e-learning are divided. Forty percent of the management staff cited that e-learning will increase student enrolment as their main response, while 30% cited e-learning will require a big investment as their main response and only 5% believed that it will reduce the cost of teaching.

Question 10 of the questionnaire asked the participants if they wished to be able to develop staff skills to improve the quality of teaching and learning through the application of e-learning. Not surprisingly, they all provided a 'Yes' responses. Another open-ended question (question 11) required the management to identify the area(s) of expertise (skills and knowledge) that they would find most useful. The respondents were able to provide more than one response. These responses are reflected in Table 4.27.

**Table 4.27 Skills required for e-learning as identified
by the management staff**

Questionnaire	Responses	Frequency	Percentage (%)
11. Can you identify the area(s) of skills and knowledge that you would find most useful?	Instructional design	9	11.25
	Web Programming	10	12.5
	Systems administration	14	17.5
	Program Administration	15	18.75
	Multimedia producers	10	12.5
	Online Lecturers	20	25
	Systems analyst	2	2.5
TOTAL(20x4 responses)		80	100

The management have expressed different views regarding the skills and knowledge required for an e-learning environment. Recognising the importance of skills required by the online lecturers was identified by 25% of the respondents.

4.2 Results obtained from semi-structured interviews

4.2.1 Students (Focus groups)

The following are the results from the semi-structured interviews that were conducted with the student focus groups. A sub-sample of 120 students who originally completed the questionnaire participated in these semi-structured interviews. The students formed five focus groups, one group representing each faculty. The following section gives a summary of the results obtained from the interviews with the focus groups.

When asked to give reasons why they do not access the internet every day, the respondents gave a variety of responses, which were summarised into three main reasons given by each group. The responses of some groups were similar to responses of other groups. This summary of the breakdown of these response are presented in the following Table 4.28

Table 4.28 Internet usage

Interview Question	Responses	Frequency	Percentage (%)
1 .What is the reason for students not accessing the internet every day?	Limited computer and internet facilities available at the university	5	33.3
	internet is used for sending and receiving emails only	2	13.3
	Limited spare time in the timetable	1	6.7
	No computer and internet facilities at home or dormitories	2	13.3
	Electricity cut off in some days	2	13.3
	Connectivity problems	2	13.3
	Accessing the internet outside the university is expensive	1	6.7
TOTAL (5x3 responses)		15	100

The results showed in table 4.28 above shows that there are various reasons which prevented students from accessing the internet daily. Most of the reasons are weighed equally. However one third of the students (33.3%) said limited computer and internet facilities at the university is the main obstacle.

Each group provided two responses to question 2 of the interview, *Why don't students use Blackboard as expected?* The following Table 4.29 provides a summary of their responses.

Table 4.29 Reasons for not using Blackboard

Interview Question	Responses	Frequency	Percentage (%)
2. Why students do not use Blackboard as expected?	No training was provided on how to use Blackboard	5	50.0
	No or outdated material is placed on Blackboard	3	30.0
	Limited access points available at the University or in the dormitories	2	20.0
TOTAL(5x2 responses)		10	100

Table 4.29 above shows that half of students (50%) were not using the current Learning management system (Blackboard) because no training was provided on how to use the LMS. A total of 30% said that material which is placed on Blackboard is out of date; this means that no one is taking responsibility of updating the material. Approximately 20% said it is so difficult to access the LMS due to limited access points available.

Responses to question 3 of the interview, (which problems did you have in using Blackboard?) revealed that all focus group members lacked expertise in using the LMS as well as the connectivity to the server being a problem.

The student focus group responses to question 4 (Why do you think that with e-learning, using multimedia will make material clearer?) yielded two main responses. A total of 70% of the students indicated that they will combine pictures, video and text in order to provide more detailed explains more while 30% said that the material may motivate students with the combination of different media.

Replies to question 5 of the interview (Why do students prefer blended learning when it comes to taking courses online?) revealed that students in all groups preferred blended learning as it provides online experience while at the same time they were able to meet with their fellow students and lecturers. However, students in one of the focus group said that they wanted to be seen attending the University. Studying online will not allow them to be recognised as university students.

4.2.2 Academic staff

The following are results obtain from the semi-structured interviews carried out with the academic staff members. The results were not statistically analysed as the answers obtained from all ten academics interviewed were deemed to be similar.

When answering question 1 of the interview (Describe any experience you have had, particularly in teaching that has prepared you for a full-time position at this

University) surprisingly all of the academic staff said that they had no prior teaching experience. They believed that they were the best performers at the University and were retained by the University to start their careers.

When replying to question 2 (How would you integrate technology into the curriculum you would teach?), many of the respondents thought that using software such as Microsoft PowerPoint to prepare class presentations is considered integrating technology into the curriculum.

When answering question 3 of the interview (Describe any innovative projects you have been involved in developing) only one academic (10%) out of the ten interviewed said that he had participated in the implementation of the Technology Enhanced Independent Learning (TEIL) project, which was not implemented successfully.

When replying to question 4 of the interview (What rules do you have for your classroom?) all the respondents said that they used the same rules; that is, students are required to attend almost all sessions, they have to take two tests and complete two assignments in the semester.

When replying to question 5 (Describe your teaching style and how you accommodate the different learning styles of the students in your classes), the academic staff said they used lectures, tutorials and/or practical; however, no special treatment was available for students with special needs. Students having difficulties could make an appointment for consultations which may not always be available.

When providing an answer for question 6 (If you were to teach your course online what kind of support could you offer learners?) , they said that they did not see any support they could offer students apart from giving them lectures.

4.2.3 University Management

This section presents the results obtained from the semi-structured interviews with the management. A total of 6 managers were interviewed. After the introduction, the first question was put forward to the managers, *what do you understand about*

e-learning? The following Table 4.30 provides a summary of how management understood e-learning.

Table 4.30 Understanding of e-learning

Interview Question	Main responses	Frequency	Percentage (%)
1. What do you understand about e-learning?	e-learning is the education that uses computer and internet.	3	50
	e- Learning is education provided at a distance through the internet	2	33.3
	e-learning is education where students and lecturers communicate electronically.	1	16.7
TOTAL		6	100

Table 4.30 above shows that 50% of the management indicated that that e-learning is the education that uses computers and internet, 33.3% believed that it is the education that is provided at a distant through the internet while 16.7% indicated that it is the education while student and lecturers communicates electronically.

When answering question 2 (What is your opinion about establishing e-learning courses in this University?) The management gave different responses which are summarised in Table 4.31 below.

Table 4.31 Management opinion on e-learning

Interview Question	Most important response	Frequency	Percentage (%)
2. What is your opinion about establishing e-learning courses in this University?	Will help to fulfill institution goal of increasing enrolment	3	50
	Will increase University reputation	1	16.7
	e-learning will require different expertise hence recruitment of some other staff will be needed	1	16.7
	Will require a lot of resources hence necessitate reducing resources in other areas	1	16.7
TOTAL		6	100

Table 4.31 above shows the opinion of UDSM management on e-learning is divided. While 33.3% believed that E- Learning will help fulfill institutional goals by of increasing students' enrolment, the other 33.3% indicated that e-learning will require a lot of resources hence it will necessitate the university to reduce resources in other areas due to limited funds provided by the government, 16.7% believed that e-learning will increase the University's reputation because with e-learning students from other countries apart from East Africa will also be able to enroll in some programmes; another 16.7% believed that e-learning will require different expertise hence the recruitment of some other staff will be needed.

When answering question 3 of the interview (Do you think this institution has the potential for e-learning? Why?), all the respondents agreed in principle that the University of Dar es salaam has the potential for e-learning but in different perspectives. Therefore the respondents were required to give reasons why they think that UDSM has the potential for e-learning. Every respondent gave two reasons and the following is the summary of their responses. The following Table 4.32 provides an analysis of the above responses.

Table 4.32 UDSM potential for e-learning

Interview Question	Responses	Frequency	Percentage (%)
3. Why do you think this institution has the potential for e-learning?	The University has the most qualified staff compared to other universities in the country	3	25.0
	The University had implemented a number of Innovative projects.	2	16.7
	The university has the existing infrastructure which can be expanded and used for e-learning.	4	33.3
	Staff of UDSM has been involved in different number of research projects.	1	8.3
	UDSM reputation is still high compared to other university in the country	2	16.7
TOTAL (6x2 = 12 responses)		12	100

Table 4.32 above shows that one third of the UDSM management (33.3%) believe that the university has the existing infrastructure established by other projects such as TEIL and ITRU which can be expanded and used for e-learning. One quarter (25%) said UDSM has the potential to implement e-learning because it has the most qualified staff compared to other universities in the country who can be easily developed in special training to handle the e-learning projects; 8.3% said that the University had implemented a number of innovative projects which may inform practice to e-learning project. Approximately 16.7% said staff of UDSM have been involved in several research projects; they can be easily involved in the work for the e-learning project. A further 16.7% said that because UDSM's reputation is still high compared to other universities in the country, many students will enroll in UDSM e-learning programmes which will ensure its sustainability.

When answering question 4 (How do you want to develop staff skills to improve the quality of teaching and learning (through the application of e-learning)?, the managers provided similar responses suggesting that they will ensure that all staff involved are registered for the advance courses (mainly PhD) and attend particular workshops. The following Table 4.33 provides a summary of these responses.

Table 4.33 Developing staff skills

Interview Question	Responses	Frequency	Percentage (%)
	Have staff involved enrolled for PhD courses	6	50.0
	Have staff involved attend different training workshops and seminars	4	33.3
	Have staff involved mentored by staff from reputable university which practices e-learning successfully	2	16.7
TOTAL (6x2 = 12 responses)		12	100

The above Table 4.33 shows that 50% of the management believe that the involved staff should enroll in a PhD program to enable them do research on e-learning; 33.3% of the management think that involved staff should attend different e-learning training workshops and seminars so as to improve their skills; 16.7% they said that UDSM should invite staff from reputable world class universities which practices e-learning successfully to enable mentoring of their expertise to UDSM staff.

When answering question 5 (Can you identify the area(s) of skills and knowledge that you would find most useful?), every respondent was required to mention three important skills he/she think is important to develop for e-learning. The managers identified instructional design skills, multimedia programming and web programming skills. Table 4.34 below provides the analysis of the responses obtained.

Table 4.34 Important skills for e-learning

Interview question	Responses	Frequency	Percentage (%)
11. Can you identify the area(s) of skills and knowledge that you would find most useful?	Instructional design	5	20.8
	Web Programming	3	12.5
	Systems administration	4	16.7
	Program Administration	5	20.8
	Multimedia producers	3	12.5
	Online Lecturers	4	16.7
TOTAL(6x3 = 18 responses)		24	100

Table 4.34 above shows skewed results, indicating that the management believed that a comprehensive set of skills is required on team basis and not an individual basis. Instructional design and program administration each scored 20.8% of responses. The researcher compared these results with the results obtained from the questionnaire (Table 4.27) and found that they were somehow similar with slight increase or decrease in percentages; however, none of respondent made mention of “system analysts” in the interview.

4.2.4 Technical staff

The following presents the results from the semi-structured interviews administered to technical staff. There were a total of 20 technical staff from the Faculty of Informatics and Virtual Education, University Computing Centre and the Planning and Administration Department. Table 4.35 shows the demographic data of academic staff members who participated in the study. The results show that 30% of the technical staff members were aged between 31 and 35 years, while 35% ranged from 36 to 40 years, and only a few (15%) were over 41 years of age.

Table 4.35 Background information of technical staff

Number of technical staff Participated (N= 20)			
Characteristics		Frequency	Percentage (%)
Age	25-30	4	20
	31-35	6	30
	36- 40	7	35
	41- over	3	15
	TOTAL	20	100
Gender	MALE	15	75
	FEMALE	5	25
	TOTAL	20	100
Mode of employment	Permanent (full time)	3	15
	Contract (full time)	17	85
	Part time	0	0
	TOTAL	20	100
Experience	0.5 yrs	18	90
	6-10 yrs	2	10
	11-15 yrs	0	0
	TOTAL	20	100
Position	Systems Administrator	11	55
	Programmer/systems Analyst	3	15
	Laboratory Technician	6	30
	TOTAL	20	100

As shown in the above Table 4.35, only 15% of technical staff were permanent employees of UDSM. However, 85% were contracted on a full-time basis; hence no technical staff member was contracted on a part-time basis. The results also show that 90% of staff had experience not exceeding five years. The data also show the positions of the technical staff. During the interview they were asked to describe their main duties; 55% were system administrators, where their main duties are to install, maintain, upgrade and evaluate computer hardware and software as well as to train and assist users with using the computer systems. There were computer programmers (15%) who write computer programs and 30% were scientist/laboratory technicians who helped students in the laboratories.

When asked to give their views about the introduction of e-learning at the University of Dar es salaam (question 3 of the interview), all the technical staff agreed in principle that the introduction of e-learning will increase enrolment and reduce constraints in physical facilities. However, they all believed that proper arrangements should be put in place before the establishment of e-learning courses. The following Table 4.36 gives a summary analysis of the responses obtained.

Table 4.36 Views on e-learning by the technical staff

Interview Question	Responses	Frequency	Percentage (%)
3. What is your view about the introduction of e-learning at this university?	e-learning requires highly qualified and committed staff	5	25
	e-Learning requires variety of skills	8	40
	e-learning will need an investment in both time and money	2	10
	e-learning will improve staff knowledge	5	25
TOTAL		20	100

Table 4.36 above shows that the technical staff had different views on e-learning. A total of 40% of the technical staff believe that e-learning requires a variety of skills thus technical staff should be trained in both technical and pedagogical skills. One quarter (25%) indicated that staff commitment is very important in that E-Learning requires not only qualified but also committed staff. Another 25% of the respondents indicated that e-learning will improve staff knowledge as staff involved will always be updated with new skills and knowledge. The remaining 10% of technical staff said that they indicated that e-learning requires a large investment in both implementation time as well as financial commitment.

When replying to question 4 (How would you use your technical expertise in e-learning?) , technical staff gave a variety of responses which could be summarised

into three major categories of responses. The following Table 4.37 presents the results obtained.

Table 4.37 Technical skills

Interview Question	Responses	Frequency	Percentage (%)
5. How would you use your technical expertise in e-learning?	I will use my programming skills to create rich interactions	4	20
	I will use my expertise to support the technology	6	30
	I will use my expertise to provide technical support to both students and staff	10	50
TOTAL		20	100

Table 4.37 above shows that 50% of academic staff said that they can provide technical support to both students and lecturers. A total of 30% said they are capable of supporting the technology and 20% believed that they could create rich interactions using their existing programming skills.

Question 5 of the semi-structured interview (What do you consider to be your strengths and how will you use in performing your responsibilities to support e-learning?), yielded three main responses which are presented in the following Table 4.38.

Table 4.38 Strength of the technical staff

Interview Question	Responses	Frequency	Percentage (%)
6. What do you consider to be your strengths and how will you use in performing your responsibilities to support e-learning?	Ready to learn new technology	7	35
	Ready to adapt new ways of supporting students and staff	4	20
	Ready to take advance courses	9	45
TOTAL		20	100

Table 4.38 above shows that for 45% of technical staff the main response was readings advanced courses if they received sponsorship, 35% said they are ready to learn new technologies while only 20% said they had the strength in adapting new ways of supporting student and staff in using the technology.

In their replies to item 6 (Which do you think are technical area that is potential for e- learning that need some improvement?), three main answers were provided as summarized in Table 4.39 below.

Table 4.39 Areas which require improvement

Interview Question	Responses	Frequency	Percentage (%)
7. Which do you think are technical areas for e- learning that need some improvement?	Training of students on technology to include more practical components	6	30
	Frequent need to upgrade computers and other equipment to match with the changing technology	6	30
	Technical staff be upgraded for new and changes in technology	8	40
TOTAL		20	100

Table 4.39 above shows that technical staff had different views on the areas that constituted the highest priority for improvement. A total of 30% of technical staff said that there was a need to change the way in which students are taught how to use the technology by including more practical components in the training sessions. This would improve their competencies with using the technology. A total of 30% said that there is a need to upgrade computers and network equipment frequently to match with changes in technology. A total of 40% said that Technical staff should be provided with upgrading courses to match the changes in technology.

4.3 Results obtained from unstructured interviews

The unstructured interviews with the ICT experts resulted in the following summary. The experts said that although Tanzania is one of the poorest countries in the world, ICT use has grown quickly. However, ICT equipment is very expensive. Very few people have computers in their homes. Expertise is still limited and hence there is a great need to retain available experts. The government through the ICT companies had set up an infrastructure, which is currently under utilised but can also be used for e-learning. Connectivity in some areas still continues to be difficult as there are places in rural areas which do not have the basic infrastructure for ICT such as electricity. Even in cities, there is a need to have power backups due to frequent power cuts which normally disrupt the connectivity and communication.

The number of mobile telephone users has increased dramatically. The study also showed that telecommunication companies in Tanzania provide packet based wireless communication called "General Packet Radio Service (GPRS) to their subscribers. Using GPRS, subscribers using a compatible handset or computers can access the internet. If subscribers are offered higher data rates they will be able to access multimedia files or even take part in video conferencing. The study further shows that, although there is a promising service provided by the mobile telephone operators which can be used to support e-learning, the services are still very expensive making it difficult for many students to afford the costs.

4.4 Summary

This chapter presented the data from the instruments administered in the research. Questionnaires were administered to 1,420 students, 80 academic staff and 20 management staff. From this original sample, a sub-sample of semi-structured interviews were also conducted with five student focus groups (120 students), 10 academic staff and six management staff. Interviews were also conducted with 20 technical staff. A number of unstructured interviews were also conducted with IT experts.

Chapter 5 : DISCUSSION, RECOMMENDATIONS AND CONCLUSION

5.1 Introduction

The main aim of this study, as outlined in Chapter 1, is centred on the problem of what needs to be done in order to effectively create an ODeL centre at the University of Dar es salaam. The research problem was then narrowed down to three key questions in order to establish possible solutions. Chapter 2 of this thesis presented a literature review of the relevant literature in this field. Chapter 3 provided an outline of the methodology used for the study, while Chapter 4 presented the results from the research instruments employed to assist with responding to the research questions. This chapter, Chapter 5, closes with the research findings, provides concluding remarks about the study and presents recommendations for the further research and development.

The answers to the research questions permitted the researcher to determine the following:

- Factors and conditions at the University of Dar es salaam and Tanzania that make the development of an ODeL centre relevant.
- Kind of expertise (skills and knowledge) required by the University of Dar es salaam for the development of such an ODeL centre.
- Appropriate resources, structures, strategies and policies required.

5.2 Findings and Results Collected from the Research

The following presents the discussion and analysis of the data obtained from the reported research. The resulting recommendations were developed analysing the data from the literature study, questionnaires, interviews and discussions with the key stakeholders.

5.2.1 Rationale for an ODeL centre at the University of Dar es salaam

The literature review, reported in Chapter Two, showed that there is a great need for the establishment of an ODeL centre at the University of Dar es salaam. A 'Centre' is a place where some particular activity is concentrated, it is a place set aside for a particular purpose; It may also be a network of persons or a set of interrelated activities functioning to achieve predefined goal. A centre must provide information and control of activity and must be associated more than any other with some activity or product. What follows justifies the establishment of an ODeL centre at the University of Dar es salaam.

As the main public university in the country, the University of Dar es salaam has to respond to the growing demand of access to higher education arising from both the Primary Education Development plan (PEDP) (Ministry of Education, 2001), and Secondary Education Development Plan (SEDP) (Ministry of Education, 2004) and other similar programmes. The study shows that UDSM is the main university in the country which admits more students compared to all other universities in the country. About 26,719 enrolled in the University in Tanzania in 2006, and by the year 2010 the number is expected to double as a result of the PEDP and SEDP programmes (Mshoro et al., 2007). The University is experiencing constraints in physical facilities as well as financial resources. Therefore, the establishment of an ODeL centre will assist with easing pressure on the UDSM to improve the quality and flexibility of teaching and learning as the centre will assist the Faculties to customise already existing academic programmes in such a way that they can be delivered at a distance using technology. There is also an importance of developing ICT in graduates skills. The establishment of e-learning will provide a strategy to respond to three major challenges: Cost, Quality, and Demographics.

Cost

Government funding which is used to help offset institutional expenses has become very limited in the past few years due to limited government budgets. Apart from this fact, there is a need to improve the quality of teaching and learning at the University to match the increased student enrolment.

Quality

The University of Dar es salaam needs to consider additional delivery methods such as the use of e-learning as a way of maintaining quality while increasing numbers of students enrolled. Universities are being evaluated on the quality of graduates. According to Bates (2000) emphasis should be on what students have learned, not what they have been taught. Therefore, using ICT in teaching and learning should be a priority.

Demographics

The results obtained from the student questionnaire (Table 4.1) reveals that there is a high number of mature age students. For example, more than half (52.5%) of the students in the Faculty of Education are aged from 31 to 35 and 18.4% are over 36 years of age. These may be adult students who are also working. These adult students may not be able to attend the University; hence e-learning may be able to accommodate their needs.

Access to e-learning Facilities

The study showed that 96.25% of the surveyed academic staff members were ready to offer their courses in open distance e-learning mode (Table 4.22). This is a very positive sign for the UDSM to have people ready to implement e-learning. However, teaching in an e-learning environment necessitates adoption of new technologies that are more facilitative (Palloff & Pratt, 2001). Academic staff members need to have constant support and guidance when designing and delivering courses. Table 4.19 shows that more than half of the academic staff (62.5%) involved in this research are willing to use technology in their teaching if they were able to get more technical support and up-to-date information on the best usage of technology. Although the principles of designing traditional courses are similar to that of designing e-learning courses, it is necessary for e-learning instructors to be trained and given enough support so that they effectively adopt new teaching methods and understand how the contents of their courses will be delivered in the new environment (Levy, 2003, p .12).

The established ODeL centre should be a training facility for University academic staff on the best use of ICT in the development, delivery and management of e-

learning programs. There should also be a plan to enable staff involved in each stage of the design, development and management of ODeL programs to acquire skills in e-learning components. In a social aspect, this can also be complemented by other activities such as “showcase skills” which scope for staff to demonstrate to their peers the innovations, best practices etc that they have implemented in teaching. This will prevent prescription of what staff have to do instead provide staff with a vision of opportunities to grasp. Thus, a centre should be physically located where training and development programmes are conducted.

Delivery point for e-learning Programs

Table 4.2 shows that 92.8% of the surveyed students did not have computer facilities in their homes. This means that access to content may be a major problem facing many e-learning students and may lead to their failure to comply with the online requirements. Apart from being the main facility for the development of ODeL programs, the established ODeL centre can also provide students with access to web based learning materials. The literature review in Chapter Two of this thesis described a similar facility in Malaysia by UNITAR. The ODeL centre at UNITAR provides students with computer and internet access to learning material and it is also used to accommodate some face to face meetings with their facilitators; it is believed that the social impact of learning is also very important and it gives students additional incentives (Alhabshi, 2002).

Administration and coordination of e-learning

The University of Dar es salaam had already started e-learning initiatives. As mentioned in the literature review (Chapter Two) a concerted effort had been made to integrate ICT in teaching and learning which embarked on a Technology Enhanced Independent Learning (TEIL) program. This program saw the establishment of an e-learning platform (Blackboard) and several student ICT laboratories in the Faculties. However, these facilities became dormant as none of the courses were being delivered using this platform. The reason behind this is that there were no appropriate models (structure, strategies and resources) to develop and deliver e-learning programs at the University. The literature reports that the University of British Columbia established a Distance Education and Technology Unit as the centre for administration, development and production of

e-learning courses as well as to provide support services to both e-learning students and facilitators (Bates, 2004). A similar facility could be developed for the UDSM by merging activities of the ITRU and the AVU Learning Centre into a single unit to coordinate the activities related to ODeL mode of delivery at the UDSM. Establishment of the ODeL centre will form an organ that will be responsible for spearheading and coordinating the ODeL oriented activities at the University level. This will be a centre of Excellence in e-learning which concentrates existing capacity and resources to enable collaboration on long-term e-learning projects that are locally relevant and internationally competitive. Even in distributed learning, e-learning projects should be centrally coordinated (Bates, 2000).

Response to the National ICT Policy

With the establishment of an ODeL centre, the UDSM will be responding to the National ICT Policy (Ministry of Transport & Communication, 2003) on educational access through enhancing education using ICT. As reported in the literature review, the UDSM is obliged to contribute to the national demand of ICT training and the effective use of ICT in teaching and learning by exploring the ODeL mode of delivery. Therefore, the ODeL centre will be the main actor on this.

Supporting Institutional Vision and Mission

As reported in the literature review (Chapter Two) of this thesis, the Corporate Strategic Plan (2004-2013) stated that the university is guided by a vision “To become a reputable world class university that is responsible to national, regional and global development in dynamic knowledge creation and application” (UDSM, 2004, p. 25). The formulated core mission is “the unrelenting pursuit of scholarly and strategic research education, training and public service directed at attainment of equitable and sustainable social economic development of Tanzania and rest of Africa” (UDSM, 2004, p. 26). The mission and vision is set to address the challenges. The ODeL centre will support the vision and mission of the University of Dar es salaam and provide additional capability and more effective ways of utilising resources to meet the challenges so that the vision and mission of the Institution are achieved. Any Institution that wishes to implement e-learning should investigate how e-learning will support the vision and mission of the institution

(Bates, 2005). The results as reported in Table 4.31 shows that 50% of the UDSM management believe that UDSM will support the university goal of increasing students' enrolments.

5.2.2 Required Expertise (skills and knowledge) for e-learning

Various expertise is required for e-learning to take place effectively and efficiently.

Required Expertise by Technical/Technological staff

An ODeL Centre requires a different set of skills to carry out projected e-learning tasks. The literature, as reported in Chapter Two, suggests that designing and producing the courseware in house has great advantages than contracting it out (Inglis, Ling & Joosten, 2002). This justifies the ODeL centre which is expected to employ staff with a variety of skills to carry out many tasks associated with e-learning (Stevenson, 2001). It is not expected for academic staff to have a high level of expertise in such a variety of technical areas; therefore, a team of technical staff will be required to provide technical and professional skills in the entire process of creation and delivery of e-learning courses. There should be Instructional designers to act as course developers who provide both technical and pedagogical approaches that are effective to support student independent learning (Bates, 2005). Other technical and professional staff such as web programmers and multimedia producers will be required to produce multimedia course content. There should also be people who support maintenance of computer hardware and software at all times. The study as shown in Table 4.38 has revealed that more than one third of technical staff (35%) are ready to learn new technologies. Therefore UDSM should think of training of these staff so that they possess multiple skills. A variety of expertise will be required regardless of whether the staff poses multi-skills. e-learning will be more successful if a number of staff are working together to accomplish different e-learning tasks (Weller, 2002, p. 99). The results from this study showed that the University has systems administrators, computer programmers and laboratory technicians in the teams of technical staff (Table 4.35). Additional expertise should be acquired to comply with e-learning requirements. This can be achieved through recruitment of appropriate staff or through development and training of the existing staff. Table 4.34 of the research

results shows that the management could identify skills required however could not say which skills are most required.

Required Expertise by Academic staff

A critical factor underpinning either the success or failure of any e-learning is the preparation and enthusiasm demonstrated by the academic staff (Raymond, 2000). This study (Table 4.15) revealed that 92.5% of the surveyed academic staff at the UDSM claimed to be enthusiastic; therefore, they may only need to be provided with proper training to prepare them for e-learning related activities.

The results (Table 4.19) show that 62.5% of the surveyed academic staff are more likely to use technology in their teaching if they get additional technical support. Having a wide staffing structure is not likely to prevent an acquisition of required expertise for academic staff who will be delivering ODeL programs as they will have different roles to play which require more skills compared to those needed for face to face delivery. Faculty members should be assisted in the transition to the online environment (Phipps & Merisotis, 2000).

Competencies required by the academic staff to support e-learning can be divided into competencies prior to the start of a course, competencies required during the course and competencies an academic staff must possess after the course delivery (Palloff & Pratt, 2001). Academic staff members involved in the delivery of e-learning courses must firstly have a mastery of the subject being taught. They must also be able to effectively create an e-learning syllabus that meets the course requirements and effectively use whatever technology has been selected for the course. During the delivery of the course the academic staff should be able to:

- Transit from their current role into the role of facilitator and overall manager of the course
- Develop an e-learning community by promoting collaborative learning and encourage contacts between students and faculty Integrate students into the institution and its culture
- Maintain the momentum of the course

- Properly perform online students' evaluation as well as evaluating themselves and submit students' evaluation results to university authorities using the appropriate method and be able to give prompt feedback to students regarding their results (Palloff & Pratt, 2001).

The above skills are very important for e-learning and academic staff need to be trained how to teach and support e-learning students. The study shows that currently academic staff are not aware of that. The results as reported in Table 4.16 shows that 60% of academic staff are not doing or have never done any assessment using ICT. The results further shows that although 25% of academic staff use ICT in teaching on a daily basis, none of the academic staff provide feedback communication with students. Interview results, as reported in Chapter Four of this thesis, showed that when answering interview question 6, *If you were to teach your course online what kind of support could you offer to learners?*, the academic staff could not see their responsibility in supporting learners apart from teaching them. Therefore, the academics need to be made aware of this issue.

Required Expertise by Learners (Students)

e-learning students should also be conversant with the specified technology before the start of the course so that they can easily access the content and perform different tasks in the learning process using technology. The literature review (Chapter Two) of this thesis has revealed that basic technology skills are required for students to be able to interact with the material (Carliner, 2002). Table 4.29 showed that 50% of the student who participated in the interview process said that they are not using the existing LMS (Blackboard) because they were not trained on how to use the LMS. If the educators and learners have not adapted to e-learning as expected, then the desired learning outcomes will not be achieved Taylor (2002). e-learning students can only be effective if they master the technology being used (Bates, 2005).

5.2.3 Required Resources

This study has identified the following resources that are required to establish and sustain an Open and Distance Learning Centre.

Human resource

The ODeL centre requires sufficient staff and appropriate diversity of skills. Staff numbers should depend on the programs being offered by the University (Inglis, Ling & Joosten, 2002) and the technical infrastructure (Collis & Moonen, 2002). This study's literature review revealed that at the University of British Columbia, an instructional designer is allocated to each course and works closely with the subject matter experts appointed from each academic unit offering e-learning courses. e-learning staff should possess the capacity to generate high quality work and possess the multi-disciplinary capacity as many jobs will need the integration of various skills (Stevenson, 2001). Training and development of staff is considered to be very important because they will require different skills compared to the skills needed for face to face delivery. To make sure that the appropriate human resource is maintained, staff should be trained in order to improve skills, improve confidence and create positive attitudes. Development of staff skills can also be complemented by other activities such as "showcase skills" where staff demonstrate to their peers the innovations and best practices they have implemented in teaching. Staff development and training can also be used as platforms for exchanging ideas among staff and as a tool for retaining staff (Salmon, 2000, p. 58).

Staff training can take several forms including seminars, workshops and mentoring (Inglis, Ling & Joosten, 2002). The study results, as shown in Table 4.38, show that 45% of technical staff are ready to take advance courses and 35% are ready to learn new technology, However, they should be aware of the objectives of their development towards institutional mission and vision (Inglis, Ling & Joosten, 2002). UDSM should ensure that trained staff are retained and that their mode of employment converts to permanent status. Although there are no technical staff employed on a part-time basis, as shown in Table 4.35, only 15% of technical staff are permanently employed by the University.

Technical/technological infrastructure

This study's literature review showed that a number of ICT infrastructure systems are available at the UDSM. The existing infrastructure can be expanded and /or added to accommodate the required ICT infrastructure for e-learning. The study,

as shown in Table 4.32, has revealed that one third (33.3%) of the Management thought that UDSM already had existing infrastructure which can be expanded and successfully used for e-learning, however the capacity and quantity of technological should consider the changing needs of students, the pedagogy that must be applied to the content and the services required to meet these needs (Daniel, 1996).

The literature review showed that between 1994 and 2002, the University of Dar es salaam increased student enrolments by almost 290% from 2,898 in 1995 to 8,411 in 2002 (Luhanga et al., 2003). Therefore, the infrastructure should be adequate to accommodate the increasing number of students. Sufficient bandwidth is required when it comes to multimedia content and for improving accessibility. The UDSM has recently increased its bandwidth from 256kbps/512 kbps to 1Mbps/2Mbps for academic use (Mrema et al., 2004). However, this increase may not be enough to accommodate the increasing number of enrolments. There are still problems with connectivity due to limited bandwidth caused by either cost factors or the scarcity of modern equipment. Inadequate telecommunications infrastructure can prevent implementation of e-learning; The study, as shown in Table 4.2, shows that the majority of students 87.9% can access the internet only at the university therefore as enrolment increase infrastructure also needs to be increased. In addressing this situation the University should also think of wireless networks as well as providing students with loans so that they can purchase their own computers. A point made by the ICT experts during the interviews showed that the unreliable power supply creates communication problems; therefore, there is a necessity for special interventions to ensure that an adequate platform for e-learning is in place.

Financial Resource (Funding)

Appropriate funding will be needed to build the infrastructure required; there should be an initial (seed) funding for the development and establishment of the ODeL centre and core funding for 5 to 10 years as appropriate to ensure continuity and longer-term research. There should be financial support from the government for support for staff scholarships. The University of Dar es salaam should provide a contribution as this will occur in a department within the University. The University

should also provide salaries for the centre leader and other staff. The study, as shown in Table 4.31, shows that some managers (16.7%) still doubt that e-learning will require a lot of resources hence necessitate reducing resources in other areas. However, the centre should ensure an intake of project income and other ways of raising funds to provide for longer term sustainability as the University's funding is mainly derived from the government budget which has been very limited within the past few years (Luhanga et al., 2003).

5.2.4 Required Structures

In order for the UDSM to move toward e-learning, a fundamental change in the structure of the institution is required.

Organisational Structures and Processes

The ODeL centre should be established as the core entity within the UDSM structure. This placement of the ODeL enterprise at the core of academic and administrative processes will enable maximum quality and standardisation of quality with minimal redundancy and cost (Bates, 2004). In order to achieve the institutional goal e-learning should be integrated within the organisational and technological infrastructure (Bates, 1999). Therefore, there is also a challenge to accommodate more flexible student centred managed processes into organisational structures as e-learning students will require new e-tools and practices to be in place to enhance and support their learning. The research results, as shown in Table 4.6, shows that 80.7% of students were interested with e-learning and Table 4.2 shows that nearly half (42.9%) access the internet for educational purposes at least once to three times a week although students are currently not supported. This is a very good sign which shows that students can easily cope with student centred learning if they are provided with the means and enough training.

Table 4.3 reveals that very few students (1.8%) are able to access the LMS. In addition, these students were only accessing the LMS to review notes prior to their exam. It would appear that the main reason being that they were not trained on how to use LMS and no support is provided, 93.9% of students (Table 4.3) claimed to have not been introduced to Blackboard at the beginning of their courses.

e-learning coordinators

The continued adoption of pedagogically sound e-learning tools and practices within Faculties will require support and co-ordination at the Faculty level. Therefore, each Faculty should have an e-learning co-coordinator who links the Faculty with the ODeL centre. This arrangement coincides with Bates' (2004) initiatives as reported in the literature review. The UBC has provided technology in every Faculty and appointed an e-learning coordinator to work in the Distance and Technology unit (Bates, 2004). The establishment of an ODeL centre should not prevent the distributed organisational structure; the ODeL centre should operate on a project management model with many of its staff seconded to work in the Faculties on a continuing basis while the units will provide immediate support and find appropriate support from the centre (Bates, 2000). UDSM can afford to implement this setup; the study, as shown in Table 4.35, shows that more than a half 55% of the technical staff are system administrators. Their main duties are to install, maintain, upgrade and evaluate computer hardware and software as well as to train and assist users with using the computer systems mainly in faculties. These staff can be further trained to support e-learning at the faculty level.

Regional centres as access points for e-learning Programs

Table 4.2 shows that 92.8% of the surveyed students do not have computer facilities at their homes. The results obtained from the interview with the student focus groups have revealed that many students were not accessing the existing LMS (Blackboard). One of the reasons given by a student is the lack of access points. Studying in an online environment requires computer and internet access to learning materials. Therefore, regional ODeL centres should be established to give students access to computers and the internet. A similar arrangement has been provided by the UNITAR. As reported in the literature review, UNITAR successfully implemented various regional centres around Malaysia and used them as access points for students with no facilities at their homes. Students are given the opportunity to select the centre they wish to visit nearest to their homes. The centres are the branches to the main ODeL centre (Alhabshi, 2002). Investing in a regional centre may not be easy at the beginning of the project therefore UDSM should make arrangements with colleges or institutes, particularly with teacher colleges with existing ICT infrastructure in major cities so as to be

accommodated in their premises. Employer provided facilities can also be used by students to help them facilitate their studies especially for teachers in schools. This will dramatically cut down the investment cost as only equipment will then be required. This arrangement was successfully tested in Malaysia; UNITAR did not have to invest in a regional centre or require obtaining a new license. A regional centre will also be important for conducting face to face meetings with students and their facilitators. The study, as shown in Table 4.8, shows that 79.2% of the students who participated in the survey said that they prefer blended learning which includes both online and face to face.

5.2.5 Required Strategies

The following presents the considerations towards appropriate strategies required for the successful implementation of an ODeL centre and e-learning delivery.

Delivery in both online and offline modes

e-learning allows students and lecturers to communicate without being in the same place thus reduces cost and time. However this arrangement requires access to a computer (server) and the internet where the learning environment is delivered. In developing countries like Tanzania, there is always low bandwidth and thus the connection speed may not be sufficient for the e-learning content, especially for multimedia content. Therefore, apart from delivering courses online, the established ODeL centre should also consider offline delivery through CD-ROMs. This mode of delivery does not require students to be online at all times. Students may log onto the server for asynchronous communication by using low bandwidth application such as emails and discussion forums. As only 0.2% (Table 4.2) of the surveyed students had access to the internet in their homes, the offline delivery mode will be the solution to access problems such as high internet connection costs. e-learning may be cost effective compared to traditional face to face learning only if there are a large number of students and the access is reliable (Bates, 2005).

Re-use of e-learning content

Creating e-learning content requires both an appropriate application of pedagogy and technology that is becoming expensive and time consuming. Therefore, the

ODEL centre should consider the re-usability of content through the creation of learning objects. This has the potential to reduce cost of re-creating existing content while still creating quality content (Barrit & Alderman, 2004). However, the focus on learning objects (LO) to be created should be on Generative LO (GLO) instead of Re-usable learning objects (RLO). GLO have the following features:

- Productivity: Creating new content based on existing patterns
- Adaptability: Learning objects are easy to adapt into new contexts

Through the use of learning objects UDSM will be able to create quality and flexible learning resource which can be reused and repurposed in different learning environment and context. The effectiveness of expensive developed learning resources and the return on the investment made may be limited because the resources developed within particular Learning environments cannot be transferred for use in others; The challenge is therefore to make the learning resources 'interoperable' across different faculties. Sharing of developed educational resource and make them suitable for a wider audience will promote the sharing of development costs among faculties as well as institutions and also Improve teaching by saving time through using a large pool of learning objects; staff can spend more time with students or developing new and exciting learning objects.

Use of open source software

Developing countries such as Tanzania cannot afford high costs of commercial software. The alternative means is to take advantage of open source software which can be customized to fit specific context of the University of Dar es salaam. A number of open source resources for Learning Management system (LMS) and Learning Content Management System (LCMS) do exist. However, consideration should be on open source technologies with no limitations on distribution which include major components that may be also found in commercial software, but available for free distribution for non-profit use. Therefore, when selecting open source software the following criteria should be considered:

- Features and functionality – The software should be selected based on its functionality, it should be analysed to determine its robustness,

reliability, scalability and consider if it includes all the teaching tools needed such as synchronous and asynchronous communication tools which allow learning to take place effectively.

- **Cost of Ownership** – Cost is also incurred to own free open source software. When selecting an LMS the cost, ease and duration of its implementation should be considered. The level of expertise required for the implementation should also be examined to see how it can be acquired and whether there is support and assistance available for the software.
- **Maintainability** – The investigation of software should look at its maintainability to see how long it will take to maintain and administer at both server and program level, if processes automated can be easily integrated with other systems and determine whether the software can run on the platform in which the University already has excellent expertise. The source code should be examined to determine its openness and its format in which they are designed for easy modification and creation of new custom modules (Avgeriou, 2003, pp. 83-99).

Institutional commitment

The University of Dar es salaam as the host institution has to formally support the ODeL centre initiative from inception. The University is to be involved in the oversight and effective integration of the ODeL centre into its broader institutional context. The director of the Centre has to hold or be awarded a position within the University such as a member of the University senate. The University of Dar es salaam is to meet all the basic infrastructure and some administrative needs. If there is funding from the external organisation, appropriate contractual arrangements are to be signed between the funding organisation and the University of Dar es salaam as well as between the centre and the UDSM.

Ensure the sustainability of e-learning

The production of high quality e-learning courses is very expensive. The sustainability of e-learning will depend on the number of students enrolled and paid. Therefore, there is a need to compare the course development costs with its usage. If students enrol in expensive courses and they cannot attend face to face

classes, then e-learning might be cheaper compared to face to face delivery. Interview with managers (Table 4.32) revealed that half of the managers (50%) believe e-learning will increase enrolment while there are some (16.7%) who think UDSM potential for e-learning can also be obtained by its reputation inside the country and region. Hence, the UDSM through the established learning centre should ensure sustainability of e-learning by producing courses that can attract many students. Many more students may also enrol if they are made aware of the e-learning courses.

Another strategy for this is to find and adopt already existing resources that can be used in the context of UDSM rather than create their own material to present.

5.2.6 Required Policies

When putting e-learning into practice, there should be Institutional and National e-learning Policies.

The Institutional e-learning Policy

There should be an institutional e-learning policy to provide guidelines that will promote the development of e-learning at the University of Dar es salaam. The policy should be the basis for which the University of Dar es salaam can adopt the standardised and structured approach of using new technology in daily activities.

The Institutional policy should:

- Define how the implementation of e-learning is intended to confront those challenges such as limitations on resources, increased cost of education and limited physical facilities available. e-learning has the potential to overcome these challenges.
- Justify why e-learning has to be implemented. The policy should state that e-learning will be used as an approach or mechanism to achieve learning objectives and ensure the highest possible quality of education that is provided.
- Address the existing barriers to the implementation of e-learning. For example, it should be stated that without reasonable bandwidth for students wishing to study online, the University will continue to face

limitations; or, until the potential of new methods is understood by the academic staff it will be difficult to adopt e-learning at the University.

- Support structure for e-learning by supporting the establishment of an ODeL centre to build and support e-learning standards as well as building capacity.
- How e-learning standards for the UDSM will be defined and adhered to in order to guide the development of e-learning content, structuring of programmes and the technology that will be used to support e-learning.

5.3 Recommendations

The following presents the recommendations based upon what has been revealed by this study.

5.3.1 Recommendations for Introducing Practice

On a tactical level, the evidence produced from this study should be used to support the need for introducing e-learning at the University of Dar es salaam and the establishment of an ODeL centre to manage and coordinate all the activities concerning this mode of delivery at university level.

On an operational level, this study has identified and described factors and constraints that need to be considered when implementing e-learning. The study has also identified an appropriate e-learning model for UDSM which takes into account structure, resources, strategies and policies. Therefore, it should be used as a guide for the implementation of e-learning for the University of Dar es salaam.

5.3.3 Recommendations for Further research

The implementation of e-learning is a new arena for most higher education Institutions. The study revealed the challenges faced by institutions to implement e-learning. Therefore, further studies are needed to determine the following:

- The advancement of ICT will affect the delivery to developing countries such as Tanzania. Constraints associated with these technologies should be identified and possible solutions should be formulated and tested.
- Innovative ways of using technology to increase learner participation and improve quality of education provided.
- Effective instructional design for different e-learning environments (just in time, place-independent, on demand learning).
- The use of cellular telephone technology to support and enhance e-learning.
- Best ways of acquiring competencies required by e-learning instructors (formal training, on the job internship, collaborative reflection and discussion, or some combination thereof).

5.4 Conclusion

According to international standards, the percentage of the Tanzania population that has a higher education degree is still relatively small. This small percentage is not surprising as there are still low enrolment levels in higher education institutions. In line with the millennium development goals, the government of the United Republic of Tanzania should provide additional investments into education and training as it is the major factor of strengthening human capacities to address challenges. The University of Dar es salaam, as the main public university in the country, should change the development and delivery of courses by implementing e-learning as the way to increase enrolments and hence access to higher education for the majority of the population. The University of Dar es salaam needs to establish an ODeL centre to centrally coordinate e-learning activities and provide services to both academic staff and students. Optimal capabilities of the selected instructional media should be identified and utilised effectively and efficiently. When implementing e-learning, factors and constraints should be considered and strategies should also be formulated to ensure sustainability and quality of delivery.

On the other hand, the University of Dar es salaam and other higher learning institutions wishing to implement this delivery mode need to revise their policies on education and revise their structures and processes to support e-learning.

Establishment of an ODeL centre emphasises the specialist approach in staff development and thus a number of staff with a variety of skills are required to support development and delivery of e-learning. Academic staff members either need training or they need to demonstrate that they are competent enough to teach effectively via e-learning using a combination of media and technology. They also need to be actively involved in the design and development of learning materials. The learners also need to be motivated to master the new electronic media, and they have to be provided with facilities, assistance and support that will enable them to utilise the media and technology effectively in learning.

However, it will take some time for academic staff and learners to master e-learning skills fully. e-learning is a viable option with endless opportunities to provide effective lifelong learning when implemented appropriately.

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APPENDIX A

Questionnaire: A - STUDENT

This survey is meant to help evaluate the need for on-line courses and the suitability of the current online course platform at the University of Dar-es-salaam. Your input in this study is much appreciated.

Section I: Demographic Information

1. Name (Optional).....

2. Age *Please tick (✓) in the relevant box*

17- 24

25 - 30

31- 35

36 - Over

3. Faculty.....

4. Which course are you currently enrolled in?.....

5. Course duration.....

Section C Experience with internet and Blackboard

6. Do you have computer facilities at home?

YES
 NO

7. Where do you normally access the internet? (Select only one)

Mainly at home
 Mainly at the University
 Both at home and at the University
 Internet café

8. In a typical week, how often do you use the internet for education purposes?

Everyday
 3-5 times a week
 1-3 times a week
 Not even once a week

9. Were you introduced to Blackboard at the beginning of your course?

YES

NO

10. In a typical week, how often do you use blackboard

Not even once

Once a day

Twice a week

More than twice: specify how many times____

Just before the examinations

11. Which blackboard facilities do you use?

Discussion forum

Email

Chat

Notes

12. Did you have any problems using Blackboard in general?

YES (Please specify): _____

NO

Section C: General Questions about online environment

13. with the advent of the new technology (computers, internet, etc), the area of education is undergoing a revolution. What do you as a student want the new changes to bring to you? (Select the most important to you)

- More individual responsibility
- More input from the teachers/Lecturers
- 24 hours /7 day classes (Learn anytime, anywhere)
- Different modes of teaching/learning
- More on-line courses

14. What do you expect from the pedagogical point of view from an on-line course? *Select the most important to you*

- Clearer explanations of the course material using multimedia
- Learning from home
- Learning at own pace
- Communication with the instructor electronically
- Communication with other students electronically

15. Given the opportunity would you like to complete your course online?

- YES
 - NO
- Why _____

16. given the choice how would prefer to study (*Please tick (✓) in the relevant box*)

- Online
- Partial online (blended learning)
- Face to face

17. What is your opinion about working in an online environment?

18. If required, would you be interested in participating in a brief follow-up interview?

NO

YES Please provide contact details: Address

Address_____

Telephone_____

Email_____

Thank you for your participation! ^

APPENDIX B

Questionnaire: B - Academic Staff

This survey is meant to help evaluate the need for on-line courses and the suitability of the current online course platform at the University of Dar-es-salaam. Your input in this study is much appreciated.

Section I: Demographic Information

1 Name (Optional) _____

2. Age *Please tick (✓) in the relevant box*

- 17- 24
 25 - 30
 31- 35
 36 40
 41 - Over

3. Gender

- Male
 Female

4. Faculty/Institute/Department:

5. Current Position _____

6. Main teaching subject(s): _____

7. How many years have you been teaching in this university

- 0 - 5 11-15
 6- 10 16- Over

8. Mode of employment

- Permanent (Full time)
 Contract (Full time)
 Part-time

9. Which level of students do you teach?(select more than one if appropriate)

- Undergraduates
- Postgraduates

10. Which of the following modes are most important in your teaching

- Lecture
- Tutorial
- Workshop
- Laboratory

Section B: Technology and you

11. Do you use computer?

- YES
- NO

12. Where do you mainly use the computer?

- At home
- At work

13. How do you characterise your attitude toward ICT in teaching

- Enthusiastic
- Not at all Enthusiastic
- Very Enthusiastic
- Too little experience to form an opinion

14. How often do you currently use ICT in:

	Daily	Weekly	Monthly	Never
Classroom teaching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communicating with colleagues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Record keeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tracking students progress	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Workshops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feedback communication with students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. How satisfied are you in IT support?

16. Have you attended any course designed to improve your technology skills?

YES Please specify _____
 NO

17. How satisfied were you with the courses designed to improve your technology skills?

Section C: ICT in Teaching and Learning

Please circle number on the scale (strongly Disagree - Strongly Agree) which reflects how strongly you feel about the following statements

18	I'd be likely to use technology in my teaching, if I:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Collaborate on using information technology with colleagues who teach in my area	1	2	3	4	5
2	Had access to more computers in my class	1	2	3	4	5
3	Received more technology training	1	2	3	4	5
4	Had up to date information on best usage of technology in my area	1	2	3	4	5
5	Had access to the internet in my teaching room	1	2	3	4	5
6	Got more technical support	1	2	3	4	5
7	Felt more comfortable with the technology itself	1	2	3	4	5
8	Had access to more up- to-date equipment	1	2	3	4	5
9	Had more time to learn about using technology effectively	1	2	3	4	5
10	Saw a proven need for technology in my area					

19.	How do you feel about working and teaching in an online environment	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Keeping up with technology is important to me	1	2	3	4	5
2	Teaching online is rewarding and enjoyable	1	2	3	4	5
3	Teaching online helps to increase student's motivation and participation	1	2	3	4	5
4	Using internet for learning gives students a feeling of being an active class member	1	2	3	4	5
5	Using internet for teaching allows lecturers to find out about new practices that may be used or adapted	1	2	3	4	5

20.	Did the following factors prevent a greater use of technology in classroom?	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Unreliable network	1	2	3	4	5
2	Insufficient equipment	1	2	3	4	5
3	Lack of electronic course content	1	2	3	4	5
4	Time to prepare material	1	2	3	4	5
5	Resistance to change	1	2	3	4	5
6	Lack of students ICT skills	1	2	3	4	5
7	Lack of support and Guidance	1	2	3	4	5

21. If the course you are teaching is to be delivered online will you be ready to adapt?

<input type="checkbox"/>	YES
<input type="checkbox"/>	NO

APPENDIX C

Questionnaire C: Management

Section I: Demographic Information

1. Name (Optional) _____

2. Age

Please tick (✓) in the relevant box

17- 24

25 - 30

31- 35

36 - Over

3. Gender

Male

Female

4. Current

position _____

5. How many years have you been working in this university

0 - 5

6 - 10

11 -15

16 - Over

6. Mode of employment

Permanent (Full time)

Contract (Full time)

Part-time

Section B: General Questions about e-learning

7. With the advent of the new technology (computers, internet, etc), the area of education is undergoing a revolution. What do you want the new changes to bring this institution?

Rate the following from 1 to 6 (1 more important 6 least important)

- More individual responsibility for both students and staff
- More input from the teachers
- 24 hours /7 day classes (Learn anytime, anywhere)
- Different modes of teaching/learning
- More on-line courses
- No changes

8. How often do you use in a typical week the internet?

- Everyday
- 3 - 5 times a week *Please tick (✓)in the relevant box*
- 1 - 3 times a week
- Not even once a week

9. What is your opinion about establishment of online courses in this University?

10. Do you want to be able to develop staff skills to improve the quality of teaching and learning (through the application of e-learning)?

- YES
- NO

11. Can you identify skills deemed to be most useful for UDSM staff?

- _____
- _____
- _____

APPENDIX D

SEMISTRUCTURED INTERVIEWS

Introduction

- Make a short presentation of the researcher and the project
- Let the interviewee present his/her brief introduction including position and ask if he/she has any questions
- If necessary, let the interviewee present what he/she knows about E-Learning

Interview Questions for Technical staff

1. Please Explain about yourself(Name, age, position, Education, Experience)
2. Describe your main duties
3. What is your view about the introduction of e-learning at this university
4. How would you use your technical expertise in e-learning
5. What do you consider to be your strengths and how will you use them in performing your responsibilities to support e-learning?
6. Which do you think are technical area that is potential for e- learning that need some improvement?

Interview Questions students' focus groups

1. Where do you normally access the internet? Why?
2. What is the reason for students not accessing the internet every day?
3. Why students do not use Blackboard as expected?
4. Which problems did you have in using Blackboard?
5. Why do you think that with the e-learning, using multimedia will make material clearer?
6. Why do students prefer blended learning when it comes to taking courses online?

Interview Questions for Academic Staff

1. Describe any experience you have had, particularly in teaching that has prepared you for a full-time position at this University
2. How would you integrate technology into the curriculum you would teach?
3. Describe any innovative projects you have been involved in developing.
4. What rules do you have for your classroom?
5. Describe your teaching style and how you accommodate the different learning styles of the students in your classes.
6. If you were to teach your course online what kind of support could you offer learners?

Interview Questions for Management

1. What do you understand about e-learning?
2. What is your opinion about establishing e-learning courses in this University?
3. Do you think this institution has the potential for e-learning? Why?
4. How do you want to develop staff skills to improve the quality of teaching and learning (through the application of e-learning)?
5. Can you identify the area(s) of skills and knowledge that you would find most useful in terms of professional development of UDSM staff? Why?

APPENDIX E

Research Project Information Sheet

Project Title: *The Investigation of an ODeL centre at the University of Dar es salaam*

You are requested to participate in a research project conducted by Sophie Mgaiwa, a Master of Education (Instructional Design) Research student, at Curtin University of Technology, which investigates the development of an Open Distance and e-learning (ODeL) centre at the University of Dar es salaam.

Aim:

This project examines factors and conditions that reveal the importance of an open Distance and e-learning (ODeL) centre at the University of Dar es salaam in regard to increased access to higher education. The study will explore ideas concerning e-learning from key stakeholders and will explore expertise of University academic and technical staff in that area. The study will also analyse the expertise required for an ODeL centre which will be the main centre for developing university content and deliver courses online in Tanzania. The researcher hopes to devise a model which will assist in the process of developing such a centre. Your participation in this study will expose you to an exciting area of E- Learning and Educational Technologies.

Method:

The researcher will conduct a 30-45 minute interview (refer to questions attached) on an agreed date/time. As a participant, you will be asked to answer interview questions based on your knowledge and experience.

Analysis

The interview will be recorded (subject to your consent), transcribed and analysed to shed light on Distance and e-learning Models (resources, structures, strategies and policies).

Privacy and Confidentiality

All interviews will be privately collected and securely stored and accessed. All recordings and analysis will protect the identity and ensure the anonymity of the information providers.

The researcher will disclose the results of this study in the thesis and other publications in future, however you will not be identified in these disclosures and you will be shown sections which contain your specific information and given the opportunity to amend your statements. A consent form (see attached) will be required before any data is collected.

The research project has been approved by Curtin University Human Research Ethics Committee and there is no known risk associated with the study; however you may choose not to participate or withdraw from the study at any time and request that your data not be used; although it is my hope that you will complete the study.

For more information regarding your rights as a research participant you may contact Curtin Human Research Committee (Secretary) on: +61 (8) 9266 2784

If you have any questions, please ask the researcher now. Should you need further information later please do not hesitate to contact me or my supervisor using the information provided below:

<p>Sophie Mgaiwa Researcher Curtin University of Technology Email: sophie.mgaiwa@postgard.curtin.edu.au</p> <p>In Dar es salaam Email: sophie@udsm.ac.tz Tel: +255 754 290688 (In Dar)</p>	<p>Dr. Lina Pelliccione Supervisor, Faculty of Education Curtin University of Technology Tel: +61 (8) 9266 2169 Email: l.pelliccione@curtin.edu.au</p>
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Having read the information provided, you must decide whether to participate in this research project, if you decide to participate, the data you provide will serve as your agreement to do so. This letter is yours to keep.

APPENDIX F
CONSENT FORM

Title of Project: The Investigation of an Open Distance and e-learning (ODeL) centre at the University of Dar es salaam.

In giving my consent I acknowledge that:

1. I have been informed and understand the purpose and procedure of the proposed study, and all my questions about the study have been answered to my satisfaction;
2. I understand that I can withdraw from the study at any time without prejudice;
3. Any information which may potentially identify me will not be used in published material

I, _____, give my consent to my participation in the research study outlined to me.

Signature: _____ Date: _____

APPENDIX G

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