

**Practices and Problems of Technological Interventions in  
Distance Learning in Colleges/Universities of Addis Ababa**

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# TABLE OF CONTENTS

*Page*

<i>Acknowledgment</i> .....	<i>i</i>
<i>Table of Contents</i> .....	<i>ii</i>
<i>List of Table</i> .....	<i>vi</i>
<i>Acronyms and Abbreviations</i> .....	<i>ix</i>
<i>Abstract</i> .....	<i>x</i>

## CHAPTER ONE

### THE PROBLEM AND ITS APPROACH

1.1 Background of the Study .....	1
1.2 Statement of the Problem.....	4
1.3 Objectives of the Study .....	6
1.3.1 General Objective .....	6
1.3.2 Specific Objectives .....	7
1.4 Significance of the Study .....	7
1.5 Delimitation of the Study .....	9
1.6 Limitations of the Study .....	10
1.7 Operational Definition of Terms .....	10
1.8 Organization of the Study .....	11

## CHAPTER TWO

### REVIEW OF THE RELATED LITERATURE

2.1 Distance Education: An Overview.....	12
2.1.1 Concept and Definition of Distance Learning .....	12
2.1.2 History of Distance Learning.....	14
2.1.2.1 Global Perspective .....	14
2.1.2.2 Distance Education in Ethiopia.....	16
2.1.3 Characteristics of Distance Learning .....	17
2.2 Technology and Distance Learning.....	18
2.2.1 An Overview .....	18
2.2.2 Why Use Technology in Distance Learning? .....	20

2.2.3 Evolution of Technological Intervention in Distance Learning .....	22
2.2.4 Technological Generations in Distance Learning .....	24
2.2.4.1 First Generation .....	25
2.2.4.2 Second Generation .....	25
2.2.4.3 Third Generation .....	26
2.2.4.4 Fourth Generation .....	26
2.2.4.5 Fifth Generation .....	28
2.2.5 Developing and Supporting the Use of Technology in DL: What Does It Take? .....	29
2.2.5.1 Organizational Technology Capability for DL .....	29
2.2.5.2 Government Support .....	30
2.2.6 Factors to Consider in Choosing Technology to DL...	31
2.2.7 Technology and Learner Support System in Distance Learning .....	34
2.2.8 Problems Encountered in Relation to Technology ....	36

### CHAPTER THREE

#### RESEARCH METHODOLOGY AND PROCEDURES

3.1 Method of the Study .....	39
3.2 Sources of Data .....	39
3.3 Samples and Sampling Technique .....	40
3.4 Instruments and Procedure of Data Collection .....	42
3.4.1. Instruments of Data Collection .....	42
3.4.2 Procedures of Data Collection .....	43
3.5 Methods of Data Analysis.....	43

## CHAPTER FOUR

### PRESENTATION AND ANALYSIS OF DATA

4.1 Characteristics of Respondents .....	46
4.1.1 Age Profile of Respondents.....	46
4.1.2 Sex Profile of Respondents.....	47
4.1.3 Academic Position Profile of Academic Staff .....	48
4.1.4 Experience and Salary Profile of Academic Staff .....	49
4.1.5 Academic Status and Area of Specializing of Respondents .....	50
4.2 Generations of Technology .....	51
4.2.1 Technologies Being Applied.....	51
4.2.2 Types of Print Based Technologies .....	54
4.2.3 Purposes for which Elements of the Second Generation are Being Used .....	55
4.3 Factors Considered in Choosing Technologies.....	57
4.3.1 Organizational Issues .....	57
4.3.2 Accessibility/Availability of Technology Materials .....	62
4.3.3 Cost of the Technology .....	64
4.3.4 Other Factors in Choosing Technology.....	65
4.4 Integrating Existing Technology with Instructional Elements .....	67
4.4.1 Technology and Learning Objectives .....	67
4.4.2 Technology and Learning Contents.....	70
4.4.3 Technology and Learning Delivery .....	72
4.4.4 Technology and Learning Interactivity .....	75
4.4.5 Technology and Learning Assessment .....	78
4.5 Technology and Learner Support System.....	80
4.5.1 Individualized Learner Support System :.....	80
4.5.2 Group-based Learner Support System.....	81
4.5.3 Counseling Learner Support System.....	83
4.5.4 Center-based Learner Support System .....	87

4.6 Institutional Technology Capability .....	90
4.7 Government Initiatives in Supporting Technology	
Application in Distance Learning .....	92
4.8 Problems Encountered in an Attempt to Use Technology .....	94
4.9 Attitude towards Technology Related Issues .....	97
4.9.1 Attitude towards Technology .....	97
4.9.2 Attitude towards Using Technology in Distance Learning .....	98

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Major Findings.....	103
5.1.1 Respondents' Background .....	104
5.1.2 Findings Related to Aspects of Technological Interventions.....	104
5.2 Conclusions.....	107
5.3 Recommendations .....	110

Bibliography

Appendices

## LIST OF TABLES

	Page
<b>Table 2.1:</b> List of Available Technologies for DL.....	20
<b>Table 2.2:</b> Technology Choices through Time .....	24
<b>Table 3.1:</b> Population and Sample Description of Colleges/Universities and Regional Centers Included in the Study .....	40
<b>Table 3.2:</b> Frequency and Percentage Distribution of the Sample and Population of Respondents .....	41
<b>Table 3.3:</b> Summary of Basic Questions, Statistical Tool Used to Answer the Basic Question and Justification for Using the Tool.....	44
<b>Table 4.1:</b> Frequency and Percentage Representation of Salary and Experience Profiles.....	49
<b>Table 4.2:</b> Frequencies and Mean Distribution of Some Aspects of Generation .....	50
<b>Table 4.3:</b> Frequencies and Mean Distribution of Some Aspects of Types of Prints .....	54
<b>Table 4.4:</b> Frequencies and Mean Distribution of Some Aspects of Purposes of Technologies in the Second Generation.....	56
<b>Table 4.5:</b> Mean Distribution and One-way ANOVA Results of Some Aspects of Factors Considered in Choosing Technologies (Organizational Issues).....	58
<b>Table 4.6:</b> Mean Distribution and One-way ANOVA Results of Some Aspects of Factors Considered in Choosing Technologies (Accessibility) .....	62
<b>Table 4.7:</b> Mean Distribution and One-way ANOVA Results of Some Aspects of Factors Considered in Choosing Technologies (Cost) .....	64

<b>Table 4.8:</b> Mean Distribution and One-way ANOVA Results of Some Aspects of Factors Considered in Choosing Technologies (Others).....	65
<b>Table 4.9:</b> Frequencies and Mean Distribution of Some Aspects of Integration of Technology with Learning Objectives .....	68
<b>Table 4.10:</b> Frequencies and Mean Distribution of Some Aspects of Integration of Technology with Learning Contents .....	70
<b>Table 4.11:</b> Frequencies and Mean Distribution of Some Aspects of Integration of Technology with Learning Delivery.....	73
<b>Table 4.12:</b> Frequencies and Mean Distribution of Some Aspects of Integration of Technology with Learning Interactivity .....	76
<b>Table 4.13:</b> Frequencies and Mean Distribution of Some Aspects of Integration of Technology with Learning Assessment .....	78
<b>Table 4.14:</b> Frequencies and Percentage Distribution of Some Aspects of Learner Support System (Technology in Individualized Learner Support).....	81
<b>Table 4.15:</b> Frequencies and Percentage Distribution of Some Aspects of Learner Support System (Type of Group-based Learner Support System) .....	82
<b>Table 4.16:</b> Frequencies and Percentage Distribution of Some Aspects of Learner Support System (Purpose of Group-based Learner Support System).....	83
<b>Table 4.17:</b> Frequencies and Percentage Distribution of Some Aspects of Learner Support System (Technologies Used in Counseling) .....	84
<b>Table 4.18:</b> Frequencies and Mean Distribution of Some Aspects of Learner Support System (Evaluation of Counseling) .....	85
<b>Table 4.19:</b> Frequencies and Percentage Distribution of Some Aspects of Learner Support System (Evaluation of Counseling) .....	86

<b>Table 4.20:</b> Frequencies and Percentage Distribution of Some Aspects of Learner Support System (Kinds of Center-based Support) .....	88
<b>Table 4.21:</b> Frequencies and Mean Distribution of Some Aspects of Evaluation of Learner Support System .....	89
<b>Table 4.22:</b> Frequencies and Percentage Distribution of Some Aspects of Technological Capability (Involved in the Team) .....	91
<b>Table 4.23:</b> Mean and ANOVA Distribution of Some Aspects of Government Support to Promote Technology Assisted DL Program.....	92
<b>Table 4.24:</b> Mean and ANOVA Distribution of Some Aspects of Problems Encountered in Promoting Technology in DL .....	94
<b>Table 4.25:</b> Mean Distribution of Attitude Elements (General Attitude towards Technology).....	98
<b>Table 4.26:</b> Mean Distribution of Attitude Elements (Attitude towards the Use of Technology in DL) .....	99
<b>Table 4.27:</b> Pearson's R. Correlation Distribution of Attitude Elements towards the Use of Technology in DL with Age, Sex, Academic Status, Specialization and Year of Study.....	101

## **ACRONYMS AND ABBREVIATIONS**

<b>AAU</b>	Addis Ababa University
<b>ANOVA</b>	Analysis of Variance
<b>AUC</b>	Alpha University College
<b>AVA</b>	Audio Visual Aids
<b>AVU</b>	African Virtual University
<b>BBC</b>	British Broadcasting Corporation
<b>CBL</b>	Computer Based Learning
<b>CBT</b>	Computer Based Training
<b>CD-ROM</b>	Compacted Disc with Read-only Memory
<b>CLNA</b>	Creating Learning Network for Africa
<b>CML</b>	Computer Mediated Learning
<b>CSC</b>	Civil Service College
<b>DL</b>	Distance Learning
<b>EMA</b>	Educational Media Agency
<b>ICCE</b>	International Counsel for Correspondence Education
<b>ICDE</b>	International Counsel for Distance Education
<b>ICN</b>	Indian College Network
<b>MoE</b>	Ministry of Education
<b>SMUC</b>	Saint Mary's University College
<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>USA</b>	United States of America
<b>UU</b>	Unity University
<b>WWW</b>	World Wide Web

## ABSTRACT

*The principal aim in undertaking this research was to assess the current practices and problems of technological interventions in distance learning in colleges and universities of Addis Ababa and thereby forward possible suggestions for the improvement and better use of technologies in the universities/colleges.*

*The areas of concern believed to be relevant to meet the purpose of the study were: generations of technology, factors considered in selecting technologies, the use of technology in learner support system, integrating technologies with instructional design elements, problems encountered in the use of technologies, government initiatives in supporting the effort of the universities/colleges in promoting the use of technologies, and attitudes of learners and the academic staff towards technology in general and application of technology in the distance learning system in particular.*

*To this end, a descriptive survey method was employed for the study. The sample colleges/universities were Unity University, Alpha University College, Saint Mary's University College and Ethiopian Civil Service College from Addis Ababa. Regional centers included in the study were from Bahir Dar, Adama and Hawassa. The subjects of the study included 4 deans, 4 assistant deans, 16 regional coordinators, 18 experts and 35 tutors from the academic staff and 37 students from Adama, 40 students from Bahir Dar and 46 students from Hawassa. Hence, 77 academic staff and 123 students were included in the study. In order to select the colleges/universities and the regional centers, simple random sampling and stratified sampling techniques were employed. The respondents were included in the study using purposive, quota and systematic sampling techniques. Questionnaire, semi-structured interview guide and document analysis were used as instruments of data collection. Statistical Package for Social Sciences (SPSS) was used to analyze and interpret the information found from the respondents using the questionnaire. Major statistical tools applied in the study were the mean values, t-test, percentages, the chi-square, correlation and one way ANOVA.*

*Conclusions were drawn and recommendations were forwarded from the findings of the study. Findings depicted that the colleges/universities were only in the first generation of technology application backed by only a little support from the second generation to which a thorough analysis as to which technologies could be used was suggested. Only a few factors were found to be considered in selecting technologies. It was recommended that the universities/colleges form an interdisciplinary team to study factors before using a technology. It was also revealed that the technologies were only integrated with the objectives and content of the instructional design elements and not with the others. Collaboration efforts from IT specialists, instructional design experts, training professionals, tutors and students in the design was suggested to be applied. It was found that learner support system which was not supported by technologies existed. It was recommended that the colleges/universities first check on the access of the learners for the technologies and then invest. Government did not take significant initiative in supporting the DL institutions in their effort to promote technology assisted programs. It was suggested that the government reviews policies, funds technology mediated programs, promotes teacher trainings that use technologies and invest on infrastructures. It was found that there were many problems encountered and that the attitude of learners towards technology in general and applying it to DL in particular was negative and that of the academic staff was positive. To alleviate the problems it was suggested that the colleges/universities allocate budget for technology related projects, hire technology professionals from either with in the country or expatriates and arrange continuous awareness programs for learners to shift their attitudes and the government promotes application of technology in lower level study.*

# CHAPTER ONE

## THE PROBLEM AND ITS APPROACH

This section of the study presents the background of the study, the statement of the problem that initiated the study followed by research questions related to the problem and that the study attempts to address, the objectives of the study, the significance of the study, delimitation of the study, limitations of the study, some operational definitions and the organization of the study.

### 1.1 Background to the Study

Ethiopia's success in today's information-based world economy will require an accelerated demographic transition to an educated and healthy work force. It is this work force that is expected to contribute a lion's share in the development of the country. One way to acquire the force is achieved by applying a well organized education and training. Many believe that education and training are strategic tools that a society needs to continuously apply in order to sustain a global competitive advantage, create a better standard of living and/or development.

Two major alternatives are widely being used in the world to provide formal education, namely conventional face-to-face mode of delivery and distance education. Both are believed to be vital for the education system of a country. Though the widely used form is the conventional face-to-face mode of delivery, a study by UNESCO indicates that supply of the conventional face-to-face mode of delivery has for various reasons failed to keep up with the growing demand for education (UNESCO, 2003). Distance education has long been used as an alternative for the conventional education and training system. Distance education could be seen as an educational process in which a significant proportion of teaching is conducted by someone removed from the learner. It is aimed to open the doors for those who cannot attend traditional institutions of higher education. Like the conventional face-to-face learning, it should be a planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organizational and administrative arrangements.

In distance education the use of modern technologies is inevitable. A distance learning institution has a lot to benefit from a sound application of different technologies in its program. Technology enhances the teaching learning in distance education. UNESCO defines technology as follows:

*“... the know-how and creative processes that may assist people to utilize tools, recourses and systems to solve problems and to enhance control over the natural and made environment in an endeavor to improve the human condition” (UNESCO, 2003).*

A wide range of technological options is available for a distance educator to apply or use in distance learning. These technologies range from print to the advanced web-learning where learners have not necessarily to be separated from the tutor by time. Although the prime focus in distance education is on the instructional outcomes, the technology of delivery is also another aspect that needs a thorough consideration. The success of any distance education partially depends on the appropriate and effective application of emerging technologies.

It is very important here to get a picture of what technologies have been available throughout the life span of distance learning. For many years, universities with a significant commitment to distance and open education institutions have been at the forefront of adopting new technologies to increase access to education and training opportunities. The different technologies that have been used in the world can be seen categorizing them in different generations. Distance education operations have evolved through the following four generations: first, the Correspondence Model based on print technology. It is typically found in the form of study guides, self-study materials, resource materials such as books, journals, and articles and ancillary materials such as course brochures and assignments. Second, the Multi-media Model based on print, audio and video technologies. In this generation the listening and visual effects gave students much more control over the medium- as being able to stop, start and reply at will, unlike the TV and radio for which they became a replacement. Third, the Tele-learning Model based on applications of telecommunications' technologies to provide opportunities for synchronous communication. A possibility of providing students with a means of contacting their tutors and vice-versa was developed in the third generation. Fourth,

the Flexible Learning Model based on online delivery via the Internet. The e-mail, computer conferencing, CD-ROMs and the World Wide Web are the prominent technologies being used in this generation. These allowed the widest possible use of media (text, graphics, audio and video). Although many universities are just beginning to implement fourth generation distance education initiatives, the fifth generation is already emerging based on the further exploitation of new technologies. The fifth generation of distance education is essentially a derivation of the fourth generation, which aims to capitalize on the features of the Internet and the Web (Taylor, 2001 and Melton, 2002). These have been the options being entertained so far and the world expects a lot more technologies to come in the future that could even enhance the teaching learning at a distance.

The technologies discussed above have resulted in a significant change in the ways distance learning is provided. They are made to effectively be integrated with the instructional design elements, objectives, contents, delivery, interactivity and assessment so that they meet their purposes. They have also played a magnificent role in facilitating the learner support systems of the DL institutions. It has now become very easy to give a just-in-time flexible and reliable support for learners. This is a very important asset for learners in DL who are separated by time and/or space from the centers where instructions are released. The impact that technologies have brought now-a-days is making the separation of the learner with the instructor by time a history.

Research comparing distance education to traditional face-to-face instruction indicates that teaching and studying at a distance can be as effective as traditional instruction, when the method and technologies used are appropriate to the instructional tasks. Without the aid of technologies in the system, the effectiveness of DL might face a significantly serious jeopardy.

The beginning of distance education in Ethiopia goes back to 1967 as Ministry of Education collaborated with Addis Ababa University to establish a Correspondence Study Unit under the Extension Division of the University. The main target of the unit was to develop a Senior Secondary Correspondence Course for adults working in various ministries, factories and military organizations in general and teachers in particular (MoE, 1985). It was only in 1976

that Addis Ababa University took charge of conducting the program. After this time, the Department of Adult and Continuing Education, and later the Educational Media Agency (EMA) of the Ministry of Education took the responsibility and mandate of leading the distance education program. Regarding the technological development of the distance learning system in its span in Ethiopia, observations and research results depict that it has long existed in the first generation where students get printed materials via mail for their studies and submit their assignments and projects through the same. It is only very recently that some colleges and universities in the country have started to take initiatives to introduce technologies of the other generations. To mention some, Unity University, Ethiopian Civil Service College and PESC Information Technology College have tried to take some initiatives in introducing some of the technologies.

## **1.2 Statement of the Problem**

The application of technology in distance education is primarily for making a significant difference to how learners learn, how quickly they master a skill, how easy it is to study; and, equally important, how much they enjoy learning. Such a complex set of technologies will make different kinds of impact on the experience of learning (Laurillard and Diana, 2002). The range and scale of possible applications of new technologies in distance education is almost beyond imagining because, while we try to cope with what is possible now, another technological application is becoming available that will extend those possibilities even further and old educational technologies become educationally useful. The world, specially, the developed countries have done a lot in applying technologies in the distance education. Many are now in the e-learning era where interactive technologies support many different types of capability.

The evidence on the development of distance education in developing countries suggests of different concerns. For the most part, while it may have been driven by the idea of using a range of technologies, it has not been technologically driven. Rather, there has been a cautious and restricted use of any technology other than print, backed by limited opportunities for face-to-face study (Perraton, 2005:158). A review of 150 distance education programs in sub-Saharan Africa has concluded that traditional paper-based means of DL continues to be more

reliable, sustainable and widely used than technology-mediated DL programs particularly online and web-based methods of learning (Leary and Berge, 2006 in Gualti, 2008).

Encouraging progresses are being seen in Ethiopia in terms of expanding DL systems. Today there are about 10 DL institutions in the capital city providing education for large number of people. The colleges/universities involved in the program are Unity University, Alpha University College, Saint Mary's University College, Admas College, Ethiopis Distance Education College, Ethiopian Civil Service College, 2020 Open College, Addis Ababa University (to support its summer program), Hill-co Technology College, and PESC Information Communications Technology. These colleges/universities have significantly supported the conventional face-to-face learning system. Nevertheless, the technological advantages in distance learning being entertained in most developed countries are not effectively being utilized in Ethiopia like the other developing countries stated in the research above. Even though the history of distance education in Ethiopia takes us back 40 years, the system has long been bound to print materials and only very recently to some technological advancements. In support to this Sahlemariam (2004) states that the prominent medium used in distance education for upper primary school teachers in Ethiopia is the course module (print).

There does not seem to be a high level of interest in introducing modern technologies in distance education so that students maximize their learning. Even in times where a technology is used in the DL system of the countries either it is accepted only because the technology is new and available to be used or there is a misappropriate application.

Since the success of any distance education might depend on the appropriate and effective application of emerging technologies in its system, the repeated reports about the high prevalence of problems in Ethiopia with regard to the use of these technologies in distance education deserve serious research attention.

The purpose of this study was, therefore, assessing the problems and practices of technological interventions in distance learning in colleges/universities of Addis Ababa providing the program.

Accordingly, the study was aimed to find answers to the following basic questions related to the problem:

1. To which technological generation of distance learning do the colleges/universities belong?
2. What factors have been considered in selecting technologies being used in the colleges/universities?
3. To what extent are existing technologies integrated with elements of distance learning instructional design?
4. To what extent does existing technology enhance the learner support system?
5. What are the attitudes of learners and the academic staff of the universities/colleges towards the use of technologies in the distance education program?
6. To what extent does the government take the initiatives to support technology enhanced distance learning programs?
7. What are the problems confronted by the colleges/universities in the use of technologies in distance education?

### **1.3 Objectives of the Study**

The objectives of the study emanate from the very nature of the problem discussed above. To this effect, they are discussed in two different sections as general objective and specific objective in the subsequent sections.

#### **1.3.1 General Objective**

The prime objective of this study was assessing the problems and practices of technological interventions in distance learning of colleges/universities in Addis Ababa City Administration that provide distance education and giving vital recommendations that enable them to

overcome the challenges so that they could commence provision of effective distance education supported by different technologies.

### **1.3.2 Specific Objectives**

The study was designed to more specifically address the following objectives:

1. To examine the current practices of using technologies in distance learning of the universities/colleges.
  - a. To identify the generation to which the colleges/universities belong.
  - b. To assess the factors being used in the selection of technologies in the colleges/universities.
  - c. To examine the different techniques used by the colleges/universities to effectively integrate the existing technologies with distance learning instructional technology elements.
  - d. To examine the level of enhancement of technology in the learner support system.
2. To identify the problems that the universities and colleges have encountered in using/promoting technologies in the distance education and point out ways to overcome them.
3. To examine the initiatives taken by government in advancing/encouraging the use of technology in distance education.
4. To assess students' and university/college staff's attitude towards both technology in general and the use of emerging technologies in the distance education program.

### **1.4 Significance of the Study**

Familiarity with technological alternative pathways to learning is essential to today's educators. Technologies for learning at a distance will clearly affect the teaching force of tomorrow. This study, as stated in its objectives, was aimed to assess the problems and practices of technological interventions in distance learning of colleges/universities in Addis Ababa. In doing so, the output of the research may have a significant role to many who take

part in distance education program. To this effect, the following are the major significances of the study:

1. The study may provide insights on the current practices of the application of technologies in distance learning in colleges/universities. In doing so, the research may give distance education practitioners with some overview of the whereabouts of the technology in the program so that they could act accordingly to promote the use of further advancements.
2. The study may also identify the problems that the colleges/ universities face in using technologies in distance learning and propose remedies to overcome them. The universities and colleges might benefit from the valuable recommendations as to how the problems encountered could be tackled. This also is believed to alert other universities and colleges to think in advance of the problems that might show up and act proactively as they continue to introduce different technologies in their distance learning program.
3. The study may propose possible research areas for other researchers for further study related to using technologies in distance education systems of the country because, as to the best knowledge of the student researcher, much has not been done regarding technological interventions in distance learning. Hence, findings of this research and areas which could not be addressed by this study will be shown so that anyone interested might resume studies that relate technology with distance learning systems in the country.
4. The study may also give insight to educational policy makers and practitioners with what policy directions must be installed for the best application and follow-up of technologies in distance learning. Concerned government organization may know from this research what it takes to initiate the use of technologies in distance learning program.

### **1.5 Delimitation of the Study**

The study was only bound to universities/colleges providing distance education in Addis Ababa. The main reason for delimiting the study to this was that the universities/colleges found in the City Administration happen to be the pioneers in providing distance education program in the country. These universities and colleges do also provide distance education programs to quite a number of students throughout the country. Among the many distance learning colleges and universities in Addis Ababa, the study was only confined to four colleges/universities, namely Unity University, Ethiopian Civil Service College, Saint Mary University College and Alpha University College. This was done for the very reason that the researcher was limited to time and finance constraints to undertake the research in all distance learning colleges/universities of Addis Ababa. As to regional centers, only three regional centers comprising about 25% of the regional centers were included. The main reason not having considered students from Addis Ababa was to see the effect of the technology with students attending courses at distance. Distance between the colleges/universities and learners is one of the important factors affecting different variables of the teaching learning process. To this effect regions included in the study were the Southern Nations Nationalities and People Regional Government, Oromia Region and Amhara Region centering Hawassa, Adama and Bahir Dar respectively. Since the study was on technologies where many facilities and infrastructures are required to be available, for the reliability of the study, only students who live in the capital of the regions were included.

There may be many factors that contribute to the success of a distance learning program. This study, however, dealt with only technological intervention which happens to be one of the very important factors. This was owing to the fact that the country has experienced less in promoting the use of technology in distance learning and much research has not been done in relation to this. The study only attempted to address some aspects of technology like its problems in the practice, generations to which the colleges/universities belong, factors of selecting a technology for application, techniques of integrating the existing technology with elements of instructional technology, application of technology in the learner support system and opinion of students and staff towards the use of technologies in the distance learning

program. These helped the researcher see different aspects of the intervention, most importantly its current practice and the problems encountered.

### **1.6 Limitations of the Study**

There were some problems that the student researcher faced during the progress of the study. These problems were found to be a little hampering and contributed to put some limitations in the study. Among these problems the following were found to be the significant ones. The first was the inability to get tutorials and/or examination sessions for some centers in the regions where questionnaires were to be filled by students during data collection. Some of the centers had either already carried out their tutorial or exam sessions before the data collection period or they were about to provide it long after the researcher planned to collect the data. The student researcher was, therefore, left with no option but to leave the questionnaire with center coordinators so that they get them filled and returned. Second was related to the poor recording system of the centers included in the study. Though the study was aimed to assess the practice and problem of technological intervention on the students residing in the capital cities of the regions under study, the problem of figuring out these students from the recording system was found to be very high. With the help of regional coordinators, the effect of the above discussed limitations on the study was minimized.

### **1.7 Operational Definition of Terms**

**Distance Education:** “a formal learning activity which occurs when students and instructor are separated by geographic distance or by time, often supported by communications technology such as television; videotape, computers or mail” ICN (2003).

**Distance Learning:** Delivery of education from one site to another, often using various electronic support processes such as television, computers, multimedia stations.

**Technological Interventions:** The introduction of different technologies in the distance learning program such as prints, audio cassettes, video tapes, radio, TV, computers, CD-ROMS, and the web technologies.

**Technology Generations:** The periods in which different technological advancements were used in the life span of distance learning in the world.

**Learner Support:** The totality of the provision by an institution to support the learner, other than generic teaching materials produced by instructional designers/course producers.

### **1.8 Organization of the Study**

The study paper is organized in five chapters. Chapter one discusses on the background, the problem, the objectives, the significance, the delimitation and limitations of the study. It also contains some operational definitions of terms used in the study and how the study paper is organized. Chapter two deals with the review of the related literature which was made based on both theoretical and empirical findings. Chapter three presents the details of the research methodology and design employed in the study. Chapter four focuses on the data presentation, analysis and interpretations. Chapter five deals with the summary, conclusion and recommendations of the study which was made based on findings of the fourth chapter. Finally, bibliography and appendices are also included to facilitate easy reference.

## CHAPTER TWO

### REVIEW OF THE RELATED LITERATURE

This section of the study deals with different discussions made by different scholars who contributed to the development of the application of technology in distance learning. The review was made in such a way that both theoretical and imperial findings were included to fully support the study. Reference books, journals and articles were used as major sources to make the review holistic.

#### **2.1 Distance Education: An Overview**

Before discussing the application of technology in distance learning, it is very important to review some basic things related to DL. The following sections are, therefore, discussions about some of the basic concepts of distance learning.

##### **2.1.1 Concept and Definition of Distance Learning**

There have been many definitions put forward in literature for distance learning. The concepts and definitions changed through time mainly because of technological advancements that occurred through the life span of distance learning. The change in the technology not only changed the definitions but also the terms used to name this form of learning. Today, there are many terms that are being used to represent the form of learning that started with the 'correspondence education' back at the beginning that was used to name any form of learning offered to students who are at a distance, physically separated in space and time from their teachers. Some of these include: 'correspondence study', 'home study', 'off-campus study', 'distance study', 'telematic study', 'extra-mural system', 'distance education', 'distance learning' and 'open learning'.

Among the many terminologies used, the terms 'distance learning' and 'distance education' have been applied interchangeably by many researchers to a great variety of programs, providers, audiences, and media (Sherry, 1996; Perraton, 2003). The definitions given in this study and concepts discussed below could also be understood to mean distance learning or distance education. Some of the definitions and concepts are discussed hereunder.

Perraton in Teshome (2001) defines distance education as an educational process in which a significant proportion of the teaching is conducted by some one removed in space or time from the learner. According to his argument distance learning depends on two-way communications, needs a fixed instrumental base to provide administration and support and provides a systematized learning curriculum to the student.

The definition given by Milnoli incorporates many of the features of distance learning in it. He defines it as:

*Classrooms without walls...class size without limits...teaching that transcends space and time so that teachers with valuable specialties and invaluable experience can reach students hundreds of miles away...and their students can reach back, to share questions and answers that makes distance learning truly interactive.*

(Milnoli, 1996:8)

According to Holmberg (1990), distance learning could be seen as a term that covers the various forms of study at all levels which are not under the continuous, immediate supervision of tutors present with their students in lecture rooms or on the same premises but which, nevertheless, benefit from the planning, guidance and teaching of a supporting organization. Another definition by Yates and Tilson (2000:7) reads: "Distance education is an educational process in which for the majority of the time the learning occurs when the teacher and learner are removed in space and/or time from each other."

There are some scholars who define distance learning from technological perspectives available to be used in distance learning.

Greenberg (1998:36), for example defines distance learning as "a planned teaching/learning experience that uses a wide spectrum of technologies to reach learners at a distance and is designed to encourage learner interaction and certification of learning." Keegan in Valentine (2002) puts in his definition the fact that distance education and training result from the technological separation of teacher and learner which frees the student from the necessity of traveling to a fixed place, at a fixed time, to meet a fixed person in order to be trained. There is one important thing worth considering here. It is the fact that the idea of the learner being separated from the tutor by time which happened to be at the center of many of the

definitions given above is being no more included in the definition of distance learning. The introduction of technology has brought this important change. In support of this Valentine (2002) writes that the students and teachers are separated by space, not necessarily by time.

In summary, though there have been many definitions given in different times, which included the separation of the learner and tutor both in time and space, the introduction of technologies led to a new era of defining DL that exclude the separation of the two by time which happens to be a very important move.

## **2.1.2 History of Distance Learning**

This section is discussed in two major parts, global perspective and the Ethiopian context of DL to get a better picture of the historical part.

### **2.1.2.1 Global Perspective**

Teaching and learning by correspondence is the origin of what is today called distance learning. Correspondence education has been known for several generations, mainly as part of adult education. References to what we call correspondence education indicate that it started in 1970s (Holmberg, 1990; Keegan, 2000). Correspondence education is taken to denote teaching in writing, that is correspondence between students and tutors.

More formalized form of correspondence education started in Sweden in 1830s to provide continuing education to students who had left their schools and moved to places where they could not continue their studies by sending them lessons by letter and inviting to do exercises at home and send them to be marked by way of reply (Manjulike, 1996). The development of an extensive, relatively inexpensive postal service in the late nineteenth century led to the creation of print-based correspondence courses (Ascough in Pauls, 2003).

According to Dodds (1991), a number of American universities offering public correspondence education were established in 1890s. One of the major stimuli to the development of this method of teaching was the need to reach students living in isolated places, far from the traditional schools or colleges offering the courses they wanted. He further notes that this

problem was even more dramatically experienced in Australia and New Zealand, countries with thinly scattered populations, spread over large areas.

The urgent drive for educational expansion led to similar results in many third world countries soon after they achieved their independence. In India, for example, since 1960s many universities have opened correspondence course departments both at pre-degree and at degree level. Similarly in Africa many newly independent governments during the 1960s and 1970s used correspondence colleges to provide first, remedial education at secondary level for teachers and civil servants who had been unable to obtain secondary qualifications when younger, and later, opportunities for primary school leavers who could not find places in secondary schools to pursue secondary level courses (Sherry, 1996; Dodds, 1991).

As media other than the written word became more common and grew in importance, the term "correspondence education" was felt by many to be too narrow. With this in mind different terms started to be used as 'independent study' and 'home study' in North America, 'external studies' in Australia and New Zealand (Holmberg, 1990).

Since 1970s distance education is the designation that has gradually been adopted in the United Kingdom, in North America, Australia, New Zealand, and other parts of the English-speaking world, as well as internationally. A degree of formal recognition of the term distance education occurred in 1982 when the International Council for Correspondence Education (ICCE) changed its name to the International Council for Distance Education (ICDE)(Holmberg, 1990).

Today political and public interest in distance learning is especially high in areas where the student population is widely distributed. Each country has developed its own form of distance education in accordance with local resources, target audience, and philosophy of the organizations which provide the instructions. Different courses are being given by many universities for self-motivated individuals through independent study programs. Students who work on their own, with supplied course materials, print-based media and postal communication, some form of teleconferencing and/or electronic networking and learner

support from tutors and mentors via telephone or E-mail are good examples for the above discussion (Sherry, 1996).

One can notice from the above discussions that the development of DL in the world has in times been gradual and other times radical. More importantly the shift from the correspondence form of to the technology-enhanced learning is worth noticing as we look into the history.

#### **2.1.2.2 Distance Education in Ethiopia**

The beginning of distance education in Ethiopia goes back to 1967. At this time the Ministry of Education established Correspondence Study Unit in collaboration with Addis Ababa University (Teshome and Tilson, 2001). It was in 1976 that it was started to be led by MoE department of Adult and Continuing Education when Addis Ababa University's Extension Division handed over its program. The Ministry made six courses available in 1978 though the initial development of the secondary correspondence course had taken place during early years (MoE, 1985).

During 1990's, Ethiopia's distance education aimed not only at raising student enrollment at the secondary level, but also to cover both primary and secondary levels of education.

According to Teshome and Tilson (2001), the needs for distance education in Ethiopia could be seen from six different perspectives. These include: expanding access of secondary education, improving the flexibility of education with working conditions, improving the competence of teachers in primary education, improving student learning, reducing educational costs, and capacity building in the education and civil service sectors.

Among the types of distance education provided were distance post graduate education (Addis Ababa University (AAU) Faculty of Education), distance education for secondary cycle (Grades 5-8) primary school teachers, interactive radio distance program for primary school students, distance secondary education, distance post secondary education for civil servants (Teshome and Tilson, 2001: 25-38).

Distance education in Ethiopia is believed to have gone through different challenges. A report of Addis Ababa University Faculty of Education in Teshome and Tilson (2001) stated that

distance learning materials were not properly edited. There were typological errors, content duplication, omitted pages, disjointed pages and poor photocopying. There has also been a mismatch of contents with curriculum demands. The prospects for future developments of distance learning in Ethiopia and the increased use of technology are bright.

As far as support and partnerships that exist with the program, UNESCO with its objective of promoting “learning without borders” and “education for all in Africa” is supporting an initiative called Creating Learning Network for Africa (CLNA). The Network aims at connecting African Teacher Training Institutions, Teacher Education Colleges and educators to the Internet. Apart from this, the World Bank is also financing African Virtual Universities (AVU). It has financed the supply and installation of satellite receiver terminals in 14 universities in English speaking countries, including Ethiopia, Namibia, Uganda, Zimbabwe, Ghana and Kenya (Marew, 2002).

Today, there are more than 10,000 degree program distance learners enrolled in different private and public colleges/universities of the country (MoE, 2007).

The move towards a well organized distance learning system in the country seems to be a very slow process. As revealed from the discussion in the history above, the growth is well underway in terms of the number of students being enrolled. Much has not been done in using technology to maximize expulsion of the time barrier the developed world distance learning institutions have managed to enjoy.

#### **2.1.4 Characteristics of Distance Learning**

There is no universally agreed upon list that characterizes distance learning system. Many of the characteristics of distance learning, however, might originate from the definitions and concepts of itself. Keegan (2000:20) writes some of the characteristics of distance learning which he called ‘distance training’ as follows: Distance learning is a life long learning. It is not mainly meant for a certain age group and that is it. There is a high level of technology usage in learning/training. It is cost effective as compared to the conventional face-to-face learning. Unlike the conventional face to face learning mode, there is individualization of learning provision. Just in time learning, parity of esteem for men and women, parity of esteem for

further and higher education and the globalization of learning were among the other important characteristics discussed by Keegan for distance learning.

He further clarifies that the characteristics identified above are to be found in both group-based and individual-based provision, though some of them may be attenuated as group-based provision moves nearer to conventional learning, or to other forms of the use of technology for training.

Teshome (2001:13) refers to Okebukola and Shabani to indicate the following characteristics of distance learning. In this section important elements of the system are incorporated. These elements are also seen to arise from the important characteristics of distance learning. There is a need for development of a rationale for distance education, establishing goals and objectives of distance education, selection of target groups, choice of content and structure, developing mechanisms for organization and administration, choice of methods and media used in the presentation of study matter, selecting methods and media of two-way communication in distance study, course development, evaluation, and revision

The bottom line in the characteristics of DL emerge in the facts of existence of careful planning and the possibility of its being a best alternative for the conventional learning.

## **2.2 Technology and Distance Learning**

The use of technology in distance learning is believed to be very important in promoting the program. The following sections discuss some important points in technology in relation to distance learning.

### **2.2.1 An Overview**

Only a few reasonable people would disagree with the observation that the economies of the world are being influenced more and more by Information Technology (IT). Very few aspects of human life are not affected by computer hardware, software and appendages.

The education sector has not been exempt from technology influence. One of the greatest advantages offered by modern technology is the ability to instruct without the presence of a teacher (Heinich et al. 1996). We are living through an exciting time regarding technological

developments of relevance to distance learning. The traditional text-based correspondence education is being replaced by the use of advanced technologies in many parts of the world. In support of this Kramer and Schulte (2008) write 'developments in information and communications' technology throughout the last decade have substantially changed the format of DL from correspondence-style courses using technology.'

Familiarity with technological alternative pathways to learning is, therefore, essential to today's educators for the system does not exist without the influence of technology.

*Technologies for learning at a distance will clearly affect the teaching force of tomorrow. Some will teach on these systems, others will use them to provide additional resources in their classrooms, and many will receive professional education and training over them. Few will be unaffected.*

(Heinich et al., 1996: 284)

There is an important distinction between media and technology one needs to make. According to Bates (2003:214) media refers to the generic form of communication associated with particular ways of representing knowledge. Each medium not only has its own unique way of presenting knowledge, but also of organizing it, often reflected in particular offered formats or styles of presentation. The most important four media in DL are text, audio, television and computing. But a technology is used to deliver these media. A variety of different technologies may be used to deliver these media.

The question here is 'What technologies are available and are currently being used in DL?' In line with this Harry and Khan (2000) state the following list of technologies available to be used in DL:

**Table 2.1 List of Available Technologies for DL**

Audio cassettes	Video discs
Telephone teaching	Video cassettes
Computer-based learning	Cable television
Satellite television	View data
Computer – based audio graphic systems	Tele text
Computer – controlled interactive video	The Web
Video conferencing    Electronic mail	Computer conferencing
Computer – based multimedia	The Internet
Remote interactive database	Virtual reality

Source: The use of Technologies in Basic Education (Harry and Khan, 2000)

The fact being this, a review of 150 distance education programs in sub-Saharan Africa has concluded that traditional paper-based means of DL continues to be more reliable, sustainable and widely used than technology-mediated DL programs particularly online and web-based methods of learning Leary and Berge (2006) in Gualti (2008).

Assisting the media in delivering DL with different technological options is believed to be inevitable for its quality provision. The upcoming discussions in the following sections address different aspects of technology in DL.

### **2.2.2 Why Use Technology in Distance Learning?**

Before looking into the different kinds of technological options to be used in distance learning, it is very important to address the question ‘Why do we use technology to teach?’

Rapid advances in communication and information technology not only accelerate the trend of globalization but also change people’s way of learning. Technology offers new opportunities to create, store, manipulate, access and distribute information, and provides new learning environments and channels. By taking advantage of these new communication and information technologies, education institutions are now better placed to deliver courses at a distance, reach students in many places and foster interaction (Lui, 2006:132).

Allen and Presnal (2000) write five major reasons as a response to the above question. These are: to improve access, to reduce cost/increase efficiency, to improve quality, to provide 'on demand' or 'just in time' learning and to allow a learner centered approach in an asynchronous or real time model.

Technology can improve access to education for those bound by geographic, remoteness, physical handicap, or jobs that prevent being physically present at a traditional university. Faculty with extensive experience in traditional lecture classes has admitted that the need to have a well-planned and organized class time for technology causes has improved the quality of their instruction.

According to Berge (1998), current technology allows for very flexible communication in the learning environment. The instructor is able to design training that takes place at the same or different times, and that allows trainees to participate at the same or different places. He further noted that the application of technology in DL facilitates interaction with content and interpersonal interaction. In support of this Kramer and Schulte (2008) write that technology based educational instruction has resulted in a wider range of teaching functions and a higher quality of learning, more interaction and feedback for the distant student.

The main reasons for the increased importance of technology in DL as summarized by Bates (2001:213) are: a much wider range of technology is becoming more accessible to potential DL students, the costs of technological delivery are dropping dramatically, the technology is becoming easier to use, both by teachers and learners, technology is becoming more powerful pedagogically and DL instructors will find it increasingly difficult to resist the political and social pressures of the technological imperative.

Harry and Khan (2000:122) identify some of the positive educational implications associated with using technologies in DL. They cite: the availability of a greater variety of learning resources, improved opportunities for individualized learning, the possibility of greater control for students over their learning, more extensive coverage via technologies and therefore greater access to them, greater flexibility offered by the wide range of technologies, the characteristics fall in cost of new technologies as they become established, a higher degree of

interactivity as convergence occurs between old and new technologies and the emergence of more powerful cognitive tools

According to Keegan (1995), the potential benefits of adopting new technologies for our courses are: efficient communication, constructivist learning, flexibility, reduced isolation, and students experience rather than only read about. These among with the above discussed are some of the benefits of using technology in distance learning.

It is highly advised that institutions use technology in the distance learning program and benefit from the aforementioned uses of it in the teaching learning process. It would be unwise to sit back and see what will happen having chosen to be limited to traditional forms of teaching. This might result in going out of business for others might use the advantage provided by technology. To support my idea I would quote Olcott.

*The rapid changes precipitated by technology and market demands on the educational enterprise will require nothing less than a major shift in the way colleges and universities do business. It is somewhat disconcerting that many institutions believe that they survive by avoiding these changes. Many are paralyzed by the insanity principle of continuing to do things the same way and yet expecting different outcomes. Institutions that define university outreach in concert with a self-serving parochialism will find themselves out of business.*

(Olcott in Allen and Presnal, 2000)

### **2.2.3 Evolution of Technological Intervention in Distance Learning**

Literature states slightly different approaches to discuss the historical background of different technologies, other than print, used in DL. Despite some alterations, a number of similarities or fits are seen in their discussions.

According to Dodds (1991), the first educational broadcasts were transmitted in Wisconsin in the USA in 1919, 18 years after the first successful radio transmission of the human voice. In 1920s several countries, particularly the UK, the USA, Australia and New Zealand, carried out experiments using radio for both schools broadcasts and adult education programs. The BBC put as much emphasis on adult education as on schools broadcasting, suggesting the idea of 'Wireless University' in the 1920s and carrying out various experiments of radio series aimed at adult study-groups during the 1930s.

Minoli (1996) argues that formalized technology has been used in education beginning with instructional radio, film, and television in the early 1960s. Early versions of those media provided low resolution images, the technology of recording electronic signals on moving wire or magnetic tape was slow to develop. According to the author the educational community has been relatively slow in adopting the potential power of the new telecommunications' systems. The use of computers as a tool for delivering education was implemented and experimented with in the late 1970s and early 1980s. The boring, unimaginative software of the time was largely to blame for the failure of the computer as a learning tool. By the end of 1980s when better software became available, publishers were uninterested and teachers were doubtful and afraid of the high cost of computer technology. It was only in the early 1990s that telecommunications-based education started to realize its potential, especially with the advent of high-power personal computers (PCs), broadband communications and digital video.

The ultimate choice of technology through time is summarized in the following table.

**Table 2.2 Technology Choices through Time**

Period	Technology choice
1930s	Programmed learning machines
1940s	Educational radio
1950s	16mm film
1960s	Educational multimedia and audiovisual approaches
1970s	Instructional/educational television
1980s	Computer-mediated communication/CBL (Computer-based learning)/ CML (Computer-managed learning)/ CBT (Computer-based training)
	Prestel
1990	12" laser disks
1991	Audio cassettes and video recorders
1992	Interactive video
1993	Video conferencing
1994	CD-ROMS
1995	The internet
1996	The World Wide Web (WWW)
1997	Java applets in Web-based courses
1998	Streaming audio and video
1999	

Source: Distance Training: Taking Stock at a Time of Change (Keegan, 2000)

Even after Keegan identified the above in 2000, a lot more has been done since then. Among these the possibility of using mobiles for learning purposes in DL is there. Though the above mentioned technologies are not ends by themselves, they have a massive contribution in assisting the DL to a great deal.

#### **2.2.4 Technological Generations in Distance Learning**

Researchers have noted that paradigmatic shifts in education have corresponded to advances in technology throughout the history of human communication. Each of these paradigm shifts correlates with historical phases or generations of distance learning which can be linked to the specific production and distribution of distance learning materials utilized at the time, in

addition to the communication technologies utilized to deliver enrolled students who were separated by time, place and/or pace of learning.

There are five recognized generations of distance learning named the first, second, third, fourth and fifth generations of distance learning. Each has its own characteristics and different medias were used in the different generation of the learning. These generations are discussed below with a main emphasis on Willems's (2005) framework.

#### **2.2.4.1 First Generation**

The first generation of DL refers to correspondence learning with its emphasis on written printed material. This form of learning expanded rapidly towards the end of the nineteenth century with the establishment of rail systems and new printing techniques, both of which allowed the production and distribution of large quantities of teaching to geographically isolated learners. Courseware leaflets, textbooks, written assignments, study guides, self-study materials, recourse materials (such as books, journals, articles) and tests provide the foundation for learning in this generation (Willems, 2005, Teshome, 2001 and Melton, 2002).

#### **2.2.4.2 Second Generation**

The second generation of distance education heralded the integration of such technology as radio, cassette, videotapes and broadcast media with the printed materials of the first generation (Willems, 2005). According to Melton (2002), the most obvious topics for radio include news bulletins, documentaries, archive materials, speeches, and discussions, and these may well be presented in other languages where the intent is to exploit them for language learning purposes.

According to Teshome (2001), cassettes are also called Non-broadcast AVA (Audio Visual Aids). The use of the broadcast media for distance education appears to be decreasing while the use of non-broadcast audio-visual media (cassettes) seems to be on the increase. They tend to replace the broadcasting radio and television because of their greater flexibility and the greater variety of ways in which they may be used. They also have the advantage that students are much more in control of the medium – being able to stop, start and replay at will (Melton, 2002).

#### **2.2.4.3 Third Generation**

The third generation of distance learning utilizes the technologies of television, audio-conferencing and broadcasting to facilitate remote learning (Willems, 2005). Television as a means of broadcast used in distance learning was able to help students learn with a unique experience for it was able to introduce them to remote parts of the world (jungles, frozen wastes and remote mountainous areas) and to people from very different cultures. It can enable students to look back in time to visit facilities to which access is usually very restricted (nuclear reactors, cyclotrons, satellites in orbit, other planets), and to observe phenomena (inside the human body, inside the atom, in outer space) that can not be seen without sophisticated equipment (Melton, 2002: 95).

Video-conferencing, as a technology, can be a prohibitively costly exercise for individual learners, if they can access the technology required for transmission. However, the notion of broadcasting to deliver learning materials and support on broadcast radio is one which could be much cheaper technology of radio to disseminate materials - a medium available to many people around the globe.

Audio-conferencing tends to be used in distance learning to establish links between a tutor and small groups of students for conferencing purposes, rather than as a means of communication with large numbers of students. It uses telephone lines for learning though the number of students to be engaged at a time is limited (Melton, 2002: 97).

#### **2.2.4.4 Fourth Generation**

The introduction of computer-mediated communication and the growth in the popularity of the Internet with e-mail and data storage and retrieval possibilities heralded the fourth generation of distance learning. The model utilizes the technology of computer networking to facilitate communication, and hopefully learning to spatially dispersed learners, and includes such components as electronic mail (e-mail), computer conferencing, and bulletin boards. Through the potential of this media, distance learners may have the opportunity to experience being part of a learning community, despite being removed from the physical structure of the university institution (Willems, 2005).

According to Moore in Teshome (2001), computers are huge opportunities for distance learning. Particularly, the Internet is very useful for exchange of information between the learner and the teacher, for counseling, tutoring, provision of up-dated references as well as for controlling and evaluating the work of learners. He further notes that in developing countries the use of computers in distance learning has not been seen.

The Internet can support corporate needs for several DL applications, including intracompany collaborative learning and research, intercompany collaborative learning and research and corporate training (Minoli, 1996: 106). He further notes the following six Internet supports for a corporate DL as E-mail, file transfer, host-to-host communications, directory services, online library catalog and electronic whiteboards.

It, however, should be noted that the Internet cannot be considered as a complete DL solution for the reasons like no guaranteed performance, lack of extensive antiviral software, junk E-mails and security issues.

After the telephone and faxes, e-mail is probably the simplest mode of electronic communication. It may be used simply and cheaply for one-to-one communication between tutors and students and also for communication between students themselves. It is the equivalent of correspondence by mail, with the possibility of copying transmissions to a group as a whole (Melton, 2002:100). For Pandey (2007:154), e-mail is increasingly becoming the most widely used medium, ranging in function from exchange of gossip to serious dialogue and collaborative research. According to the author, e-mail is almost as common as the telephone in economically developed countries. In many cases connections are free of charges, appliances are provided at low or no cost, and training is available for neophyte users. In poor economies, e-mail has yet to make its presence felt throughout society, but is increasingly available at community service centers such as libraries, telelearning centers and 'cyber cafes'.

Discussing about Computer-conferencing, Melton argues that this offers an efficient means of communication between tutors and students able to post messages that can be read by all the students in a group. It is usually used to facilitate the exchange of views between tutors and relatively small groups of students. It works well where students are spread around the world

and would normally have negligible contact with their fellow students and very limited contact with their fellow students and very limited contact with their tutors. Although computer-conferencing is asynchronous in nature, it is possible to check who is actually on-line at the time a message is being delivered, and it is also possible for individuals to arrange to be on-line at one and the same time (Melton, 2002:101).

#### **2.2.4.5 Fifth Generation**

This distance learning experience combined text-based coursework, CD-ROM and the opportunity to participate in online subject forums and assessable 'small group' work, made possible by university/college portal access to assist computer-mediated learning. It also provided an online assessment transmission service, which was a wonderful bonus in terms of the cost of printing and transmission (Willems, 2005).

Willems quotes Taylor (2001) to argue that the fifth generation of distance learning (the intelligent flexible learning model) has the potential to benefit both institution and distance learner, by decreasing the costs associated with providing access to institutional processes and online tuition, and also providing time, place and pace flexibility for the learner.

Compact disks with read-only memory (CD-ROMs) are able to store a great deal of information in the form of text, graphics, audio and video, and as such are at the forefront of technology in so far as they are able to integrate a wide variety of media (Melton, 2002:102).

The World Wide Web (WWW) appears to be more appreciated by students than either e-mail or computer conferencing. The WWW helps as a resource to support project work and literature reviews. They make far more use of the Web than other sources such as local libraries, college libraries and direct contact with individuals or companies. The Web has the advantage of providing access to primary sources of information in most media (print, graphics, photographs, audio, and video) through streaming (Pandey, 2007: 155 and Melton, 2002).

As we carefully move through the five generations, we see tremendous improvements. The move from print limited learning system to an integration of print, graphics, photographs, audio and video has brought a great deal of change in the DL system of the world. This,

however, happens to be the case in the developed world. Evidences show that less emphasis has been given by developing countries to find themselves in the advanced generations.

### **2.2.5 Developing and Supporting the Use of Technology in DL:**

#### **What Does It Take?**

Implementing a well organized system of technology in DL requires a collaboration effort from both the universities/colleges carrying out the program and the government. Organizations must develop their capability for their DL and the government must provide some support to have technology used in the program at the end of the day. The following discussion is about these two important variables that must be considered.

#### **2.2.5.1 Organizational Technology Capability for DL**

The model discussed in this section is given by Shreiber (1998). It deals with the different stages that a DL goes through in order to finally have a well organized technology in its program.

Organizational Technology Capability describes an organization's degree of sophistication with which technology is applied to DL to resolve business needs. According to the scholar, there are four primary stages of capability that an organization may experience when using technology to deliver DL. He named them sporadic DL events, experienced DL events, establishment of organizational DL policy and institutionalization of DL.

##### **First Stage – Sporadic DL Events**

An organization at this stage is just beginning to implement DL. This is characterized by separate and sporadically planned DL and training events. Each event is sponsored and budgeted by an individual function or department. One area of the organization is unaware of what another area is doing. At this stage an organizational capability to technological supported DL is limited. The technology used to deliver instruction is rented, leased, or produced in some other way for a short time. If the technology is owned by the organization, its access is often controlled by the sponsor(s) of the DL event.

##### **Second Stage – Experienced DL Events**

As an organization's experience increases in delivering DL, its technological capability to support DL matures. At this stage, an organization often forms an interdisciplinary team

(diverse content expertise) and the participating members respond to staff and management inquiries and recommendations. The team might contain one or more individuals from each of the executive branch, instructional design, information technology, network systems, broadcasting communications and training or performance consulting functions.

This significant collaboration becomes critical to ongoing maturation by the organization for technological capability to support DL.

### **Third Stage – Establishment of Organizational DL Policy**

The first stage in the policy is to design a technology plan. It is the role of the team formed in the second stage. The plan incorporates techniques of identifying and selecting technology to deliver DL. Besides providing a stable and predictable process of facilitating the identification and selection of appropriate DL delivery media, the technology plan also establishes access to diverse delivery media, accounts for flexibility and aligns utilization of organizational technology with company priorities and business objectives.

### **Fourth Stage – Institutionalization of DL Efforts**

The existence of corporate policies and procedures regarding DL and the communication of associated business objectives facilitates the phenomenon of whole company ownership for DL. Evaluation of DL from an organizational level may include assessments of many characteristics. In this stage the learner – learner interaction, learner – instructor interaction, learner motivation, quality assurance, business driven performance objectives, organizational support, contributions of interdisciplinary design and implementation teams, hardware and software usability, access to multiple delivery media, impact of organizational culture on DL, impact of DL on organizational culture and organizational costs and benefits are to be evaluated. Encouraging feedback from these evaluations would mean that the institution is in a good shape as far as developing technological capability is concerned.

#### **2.2.5.2 Government Support**

According to Pandey (2007:126) acceptance of technology is related to the level of political support or resistance at local and national levels. National governments have been key players in the expansion of educational projects that depend on technology. Most mega-universities

have privileged access to telecommunication systems that are controlled or regulated by the government in their base country.

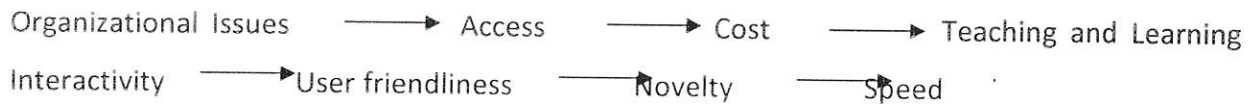
Measures that government can take to support and expand technology – mediated projects in DL include points like investing in infrastructure like telecommunications; road and electricity, reviewing fiscal policy to favor educational and nonprofit use of technologies, deregulating telecommunication monopolies while protecting educational use of telecommunications, reorienting funding policies to serve students, rather than institutions, funding technology-mediated projects directly or encourage these projects through tax relief and other benefits, funding projects that ensure access to technology for underrepresented populations, promoting teacher training that uses technology to familiarize teachers with these tools, simplifying regulations and accreditation requirements to facilitate transfer of credits across states or neighboring countries, implementing standards of quality for distance education courses and fostering progressive policies on education that encourage activities related to higher-order thinking skills rather than memorization.

#### **2.2.6 Factors to Consider in Choosing Technology for DL**

As discussed in one of the sections above, technologies have been used for three main purposes: to widen access to education, to raise its quality and to reform it. In order to meet its target, a need for having sound technology selection criteria for DL programs is mandatory. Many scholars agree on some common criteria that should be employed. Bates (1995) in Yared (2001) and Harry and Khan (2000:124) developed a model called ACTIONS which comprises of seven variables that determine the use of technology in DL. These are access, cost, teaching and learning, interactivity and user friendliness, organizational issues, novelty and speed.

Schreiber (1998) on the other hand discusses twelve criteria for selecting technology in DL. These include: access, audience, cost, fidelity, instructional adaptability, instructional methodology, instructional strategy, interaction, learning outcomes, scheduling, support service needs and up date capability. Many of the points indicated in Schreiber's criteria are also included in the seven criteria Bates discussed and I found it important to discuss the model suggested by Bates with some suggested improvements.

Yared argues that since organizational issues are the basic criteria used not only to determine the use of ICTs in DL but also to define whether an organization is a DL organization or not, it was made to be the first criterion of the model. He also argues that interactivity and user friendliness are entirely different dimensions of ICT and should be treated as two independent factors in the model. Accordingly the model could be illustrated as follows:



Studies have shown that successful applications of technology in DL require the existence of appropriate institutional organization and adequate organizational preparation for managing changes that could result from the introduction of new technology in the DL program (Yared, 2001; Shreiber, 1998; Bates, 2003). Important questions to be asked here according to Sahab (2003) are: “What opportunities or threats exist in the external environments that may influence the use of technology?” “What are the internal organizational requirements, and barriers to be removed, before the technology can be used successfully?” and “What changes in the organization need to be made?”

In any DL program, it is important to ensure whether the students actually receive the instruction mediated through the ICTs used in the program: that is the accessibility of the ICTs to the distant student. Bates (2003) approaches access to students as “availability to students” in his book he wrote on technology for distance education. It is advised to ask the question “What technology is available for a particular audience and acceptable to that audience?” (Perraton and Moses, 2004; Yared, 2001). For Sahab (2003) the most important questions to consider when considering access are: “How accessible is the technology for the learners?” and “How flexible is it for the target groups of the students the program is given?”

Bates in Yared (2001) asserts that cost is the most crucial determinant for using any technology in DL program. He further argues that since DL is widely recognized as being more cost – effective than the conventional education, unless its cost effectiveness is established DL can lose its merits. This is usually found to be controversial for some say that the use of technologies in DL increases its price and becomes more expensive than that of the

conventional learning and others say that it is still cheaper (Perraton and Moses, 2004:148). “What is the cost structure of the new technology?” and “What is the cost per learner?” are two important questions one needs to ask when choosing technology for DL (Sahab, 2003).

It is essential that any ICT to be used in a given DL program is appropriate to the particular teaching and learning process it is serving. There are several studies that have dealt with the match and mismatch between the instructional objectives and the technology used to attain the objectives in a DL program (Bates in Yared, 2001). Sahib strongly suggests that one asks questions like ‘What kind of learning needs to be developed for a particular technology?’ and ‘What instructional strategies will be employed to enable the learning needed?’ (Sahab, 2003). One has to know the unique educational characteristics of each technology and how well they match the learning and teaching requirement.

According to Bates in Yared (2001), interactivity may mean two things. The first denotes the interaction between the student and the material. The learning material should evoke successive responses from the student as the student progresses with the contents of the material and it must also provide a feed back on every response the student has to make to enrich learning item presented in the material. The idea behind this is “greater interactivity leads to effective learning”. Second, it could also mean the context of application of ICT for the two way communication mostly between the teaching institute and its students. Sahab’s (2003) important question here is “What kind of interaction does the technology enable?” In support to this Perraton and Moses (2004) write that in making educational choices we need to distinguish between the use of technologies to distribute learning materials to students and their interactivity.

User friendliness is mainly about the extent the technology to be employed is easy to be used by the learners. Some of the technologies we have might not be easy to use in spite of the enormous instructional advantages they have (Yared, 2001). One has to make sure that the technology to be used is user friendly before employing it. “How easy it is to use the technology?” is a necessary question in choosing the technology to be used (Sahab, 2003).

Certain technologies are being used in DL institutions without their relevance and appropriateness for the DL program they have been used. This often is referred to as a “novelty derived decision” on the use of technology in DL (Yared, 2001). “How new is the technology to be employed?” is the question of emphasis here (Sahab, 2003).

In the society subject to rapid change, courses need to be put on quickly and easily updated. Technologies vary in their speed of implementation and flexibility in updating (Bates as cited in Yared, 2001). “How quickly can courses be mounted with the technology?” and “How quickly can materials be changed?” are two important aspects of speed as a criterion in choosing technology to be applied in DL (Sahab, 2003).

The above being important criteria to select or choose technology to be used in DL, Race (2005) suggests the following important questions to be asked about any medium one has in mind to play its part in helping his/her learners to learn effectively. The questions are related to the technology’s help in learner motivation, enabling learners to learn by doing, the kind of feedback learners can get when they use it, its help to make sense of things for open learners, its better sides than other simple, cheaper media, its importance in the overall learning program, the where and when can students use it easily, the freedom to edit and change it, the possibility of using other media and the possibility of revising and consolidating what learners have learnt.

Here again it is worth noting that many of the questions asked by Race are also covered by the model suggested by Bates.

One can deduce from the above views that application/usage of technologies in DL needs a careful selection which incorporates those many elements listed. Using an advanced technology just for the sake of using it might not end up resulting in the desired outcome. A careful selection following the factors discussed would be a mandatory step.

### **2.2.7 Technology and Learner Support System in Distance Learning**

Before looking into some of the technologies which can be used in DL program, it is vital that we discuss some basic concepts on learner support system. There have many definitions put

forward for learner support systems. Among these, the widely accepted definition is the one given by Mills (2003). He defines it as "The totality of the provision by an institution to support the learner, other than generic teaching materials produced by instructional designers/course producers. According to him, where learning materials are produced for numbers of students, this is regarded as the academic teaching and is considered to be outside the framework of learner support. Learner support is designed to help the individual student learn from the teaching materials, may be academic, administrative, or personal, can be provided through a range of media and by a range of people. It is one of the important elements that an institution has to take serious attention to.

Tait in Kenworthy (2003) divides the primary functions of student support into three categories:

1. cognitive: supporting and developing learning through the mediation of standard and uniform elements of course materials and learning resources for individual students;
2. affective: providing an environment which supports students, creates commitment, and enhances self esteem; and
3. systemic: establishing administrative processes and information management systems which are effective, transparent and overall student-friendly.

He also identifies some of the typical services that are employed to meet the demands of these functions as enquiry, admission and pre-study advisory services, tutoring, guidance and counseling services, assessment of prior learning and credit transfer, study and examination centers; residential schools, library service, individualized correspondence teaching, including in some cases continuous assessment, record keeping, information management and other administrative systems, and differentiated services for students with special needs of one sort or another, e.g. disability, geographical remoteness, prisoners.

Inexperienced, uncertain, poor, unsure and perhaps lonely learners will need more and more support. If people are to put their toe in the water of learning they need careful nurturing and support. Not all this need be face-to-face and in groups - a number of studies have demonstrated that learning on one's own can be a safer way of starting out (Mills, 2003). Given this scenario an institution must find ways of providing learner support which are more

focused on the individual and their needs whilst continuing to be cost effective. Information and Communication Technology (ICT) clearly has a key role here for those with access to such provision. Integrating different technologies in the learner support system would, therefore, be very important to meet the above purposes.

Research, however, indicates that using technology to enhance the learner support system might have some challenges. These challenges according to Keegan (1995) are: equity problem, costs to the student, the burden on support staff, educational quality, and institutional learning and change. Working hard in order to overcome them is an important step that needs to be taken.

### **2.2.8 Problems Encountered in Relation to Technology**

There are some major problems that can be identified as challenges for a DL institution to effectively implement technology in its program. These technology-associated problems can affect DL regardless of the level at which it is being offered. Perraton and Moses (2004:143) call many of the problems that are related to the use of technology in DL “Local and National Constraints”. Harry and Khan (2000) discuss the following nine major technology-associated problems.

Lack of access is one of the major problems that a DL system encounters. At a time when the benefits of information technology are being strongly promoted, the most obvious problems such as not having Internet or possessing a computer are major challenges. Similar problems like lack of access to television, radio, or other technologies or the absence of power sources to operate them have always affected a proportion of students or potential students.

Sustainability is another problem that needs a serious attention. It shouldn't be thought that the capital cost of acquiring technology is the sole cost of effective implementation of technology in DL. The production technologies for other technologies like computer software may be many times more expensive than the original capital cost of acquiring hardware. In short, besides the start up cost there are many costs that are expected in the intervention and that might affect the sustainability of the program.

A scarce financial resource is also a problem for many distance learning institutions. The start up costs of DL programs and projects can be high, particularly if a form of technology is used for instructional purposes. It requires a lot of resource for a DL institution to effectively implement instruction supported by a range of technologies.

Positive attitude towards the use of technology in DL is important. Attitude related issues are the other problems encountered. It is worth noting two polarized attitudes of institutions towards technology. At one extreme are those who are fanatically supportive of technologies in their universal application, and at the other extreme are those who regard media as simply a distraction from serious academic pursuits. Another facet of this problem is the perception that older technologies, regardless of their effectiveness in a given situation, are intrinsically less desirable than the latest technologies.

Inadequate infrastructure to support a DL system may be a national, an institutional or an individual problem. In support of this Yared (2001) writes that the crucial national condition that determines the possible use of ICTs in DL is the status of the communications infrastructure that exists in the country.

Having a well organized application of technology being a very vital aspect in the DL program, sometimes problems arise when the focus is only on the use of the technology and not the learner. Explaining about this, Harry and Khan (2000) write that many DL institutions and programs show evidence of technology-driven rather than learner-driven approaches.

Lack of technological capability in an organization is another problem of distance learning institutions. Stages necessary in moving towards a capable organization for a complex or high level application of technology as suggested by Shreiber (1998) has already been discussed in one of the above sections. Harry and Khan (2000) strongly suggest that the introduction of new technology into an institution will be seriously hampered until the institution's staffs are very familiar with application of the technology. There will also be problems if a quick and effective trouble shooting and maintenance service is not in place.

Lack of trained human resources in technologies may also be a problem for distance learning institutions in their attempt to introduce technology in their teaching learning process. A well trained human resource is one of the most important enabling factors in an organization. Appropriately trained individuals are essential in an institution of technology where it is to be effectively introduced and used for teaching or for administrative purposes.

Problems in specifying the technology they wish to introduce and in relation to maintaining and upgrading equipment is another basic issue worth discussing. Continuation of donors' support is also inevitably a critical factor.

A DL institution well aware of these and other barriers would likely act proactively so that they won't hamper the effort being put forward to have a technology-enhanced teaching learning system.

## CHAPTER THREE

### RESEARCH METHODOLOGY AND PROCEDURES

In this section of the study, the general methodology used in the study, the sources of data for the study, the sampling techniques applied in the study, the instruments used to gather data, the procedures of data collection and the methods of data analysis are thoroughly discussed.

#### **3.1 Method of the Study**

The design and methodology of research originate from the purpose of the study. The prime purpose of this study was to assess the practices and problems of technological interventions in distance learning. Thus the study employed descriptive survey method to meet the purpose. This method was the choice in place for the very reason that it enables the researcher to obtain information on the current status of the use and intervention of technologies in the universities/colleges covering a fairly wide area of technological elements like the generation, factors, integrating with technological elements, learner support system, problems encountered, initiatives taken by the government and attitude. The appropriateness of this approach for such a study is noted by Seyoum and Ayalew (1998).

#### **3.2 Sources of Data**

The study made use of both primary and secondary sources of data. This helped the researcher get pertinent data related to the study at hand from these important sources.

The study involved different groups directly or indirectly related to distance learning program so that relevant data on the use of emerging technologies in the program were integrated. Accordingly, data was gathered from deans, experts, program coordinators, distance education experts, tutors and students of the colleges/universities.

Relevant documents of the universities and colleges, policy guideline documents of the government, books, journals, other countries' experiences, reports, research articles, website information from the internet related to the use of emerging technologies in distance learning were all consulted to enrich the data gathered from the primary sources.

### 3.3 Samples and Sampling Technique

An integration of both probability and non-probability sampling techniques was used in the study. The subsequent tables and discussions present the population and the sampling procedures employed in the study.

**Table 3.1 Population and Sample Description of Colleges/Universities and Regional Centers Included in the Study**

No.	Universities/colleges	Regional Centers
1	Addis Ababa University (Assisting the summer program)	Mekelle
2	Admas University College	Bahir Dar**
3	Alpha University College*	Semera
4	Civil Service College*	Harar
5	Ethiopia Distance Learning College	Gambela
6	Hilco Technology College	Asosa
7	PESC Information Communication Technology College	Hawassa**
8	Saint Mary's University College*	Adama**
9	Unity University*	Jijiga
10	2020 Open College	Dire Dawa
11	Yardistic Distance Learning College/Agriculture/	Addis Ababa

\*= Sample colleges/universities

\*\* = Sample regional centers

Simple random sampling technique was used to select the universities and colleges on which the research was carried out. Accordingly; Unity University, Alpha University College, Saint Mary's University College, and Ethiopian Civil Service College were selected. The four colleges/universities of the study covered 40% of the colleges engaged in DL in the city for as can be seen from Table 3.1, there are 10 distance learning colleges/universities. The main reason to have used simple random sampling for this selection was to give equal chance to all the colleges/universities providing DL of being participants of the study. This was done by using a lottery method. Regional centers were selected in the study using stratified sampling technique for the technique allows the researcher to consider some variations like geographical distance from the main center. The stratum was made based on geographical inhabitations of the centers. To this effect, three strata called North, Central and South which included their East and West peripherals were formed. Accordingly, three regional

coordination centers; namely Bahir Dar, Adama and Hawassa were selected for the study using this technique.

The following table summarizes the samples taken from the respondents from the colleges/universities and centers included as indicated in the preceding paragraph.

**Table 3.2 Frequency and Percentage Distribution of the Sample and Population of Respondents**

College/ University		Dean	Ass. Dean	Cor.	Experts	Tutors	Students		
							Adama	Bahir Dar	Hawasa
Unity University	p	1	1	4	5	29	37	43	51
	s	1(100%)	1(100%)	4(100%)	5(100%)	9(31%)	8(22%)	10(24%)	11(22%)
Alpha University College	p	1	1	4	5	33	49	46	53
	s	1(100%)	1(100%)	4(100%)	5(100%)	9(28%)	11(23%)	10(22%)	12(23%)
Saint Mary's University College	p	1	1	4	5	35	43	41	54
	s	1(100%)	1(100%)	4(100%)	5(100%)	11(32%)	10(24%)	10(25%)	13(24%)
Civil Service College	p	1	1	4	3	15	31	29	28
	s	1(100%)	1(100%)	4(100%)	3(100%)	6(42%)	8(26%)	10(35%)	10(36%)
Total	P	4	4	16	18	112	160	159	186
	s	4(100%)	4(100%)	16(100%)	18(100%)	35(31%)	37(23%)	40(25%)	46(25%)
Grand Total	p	154					505		
	s	77(50%)					123(24%)		

P = Population

S = Sample

Deans, assistant deans, program experts and national and center program coordinators were all included in the study using purposive sampling technique. This was done because these people were found to be highly relevant to give pertinent information for the purpose of the study and their number is limited. Accordingly, 4 deans, 4 assistant deans, 18 program experts, and 16 national and center distance education program coordinators were selected for the study. These comprised 42 of the 77 sample respondents of the academic staff. First quota sampling technique was used to decide the number of tutors to take from each college/university. Among the proportionalities found in quota sampling, stratified sampling technique was then used to include tutors in the study. This method was used to get respondents from different departments. Thus 35 tutors were selected from all the four colleges which comprised 45.45% of the academic staff respondents. Quota sampling

technique was employed to decide the number of students to be included in the study from their respective colleges/universities. The main reason to have used the quota sampling technique for deciding the number of students was to get proportionally equal number of students from each college. Accordingly, 29, 33, 33 and 28 students were proportionally included in the study from Unity University College, Alpha University College, Saint Mary's University College and Civil Service College respectively. Systematic random sampling was then used to select among students that should be included in the study. In doing so, 123 (24% of the population) students were included in the study. Thus the study included a sample of 200 respondents.

### **3.4 Instruments and Procedure of Data Collection**

This section presents the different instruments used in the study to collect data and the procedures of data collection.

#### **3.4.1. Instruments of Data Collection**

Data was collected using two main instruments of data collection: questionnaires and interviews. A close-ended items questionnaire with some open ended item questions was prepared and used to gather information from deans, experts, tutors, coordinators and students. This helped the researcher in gathering information from many people. The central way in which a researcher achieves to perceive the understanding, feelings and knowledge of people in a certain program is through intensive interviewing (Best and Kahn, 1993). To this effect, structured and semi-structured interview guides were used to gather information from 8 deans and vice deans to enrich the information given in the questionnaire and to get the possibility of further information that the questionnaire could not address. These people were selected because of their important positions and contributions in describing the implementation of DL program. Documents were also thoroughly consulted to get relevant information for the study.

Standardized attitude questions were included in the questionnaires to assess the attitude of respondents both towards technology in general and application of technology in DL in particular. Relatively equal number of negative and positive elements was included in the

attitude questions so that the right attitude of the respondents is depicted from the study. To this effect, a five scale Lickert Scale measurement ranging from 'Strongly Agree' to 'Strongly Disagree' was used.

More than four drafts were first prepared in consultation with the thesis advisor. These drafts helped in including relevant information that had to be included in the study covering the research questions raised. The instruments prepared were then given to distance learning experts for their comments on the content. Accordingly, five experts gave critical comments on them based on which the instruments were rectified. The questionnaire was then given to 20 people working in DL areas for pilot testing. The reliability of the questionnaire for the 20 filled and returned papers was then calculated using half-split test. Though the over all reliability score of the questionnaire was found to be 0.87, some ambiguous and vague items were further clarified based on the reliability score of each item.

#### **3.4.2 Procedures of Data Collection**

Responsible authorities of the universities/colleges were first contacted to get permission to gather the required data from their respective institutions. With the help of these authorities, it was easy to know where to find the respondents. Accordingly, questionnaires were distributed to 77 academic staff in Addis Ababa and 123 students in three different regions. Tutorial programs and exam sessions, where possible, were used to collect data from students and some tutors. In cases where tutorials and exam schedules were not available during the data collection, the questionnaires were given for distance learning regional center coordinators so that they could distribute and have them filled. The interview guides were given for the deans and assistant deans ahead of time and were conducted both in Amharic and English to make sure that information is not lost because of language constraints.

#### **3.5 Methods of Data Analysis**

Different statistical tools were used to analyze and interpret the collected data. The choice of the tools was dependent on the nature of the collected data. An integration of qualitative and quantitative data analysis was employed.

Statistical Package for Social Sciences (SPSS) was used to organize, analyze and interpret collected data. Data collected from different sources was coded, tallied, counted and organized using tables and charts. This was done to get detailed background information about the sample and responses of the participants of the study.

Percentages, means, chi-square values, one way ANOVA and t-test were employed to analyze the data gathered from respondents using the questionnaire and interviews. In doing so, the significant differences between the means and degree of agreements of the respondents' answers were observed.

Table 3.3 is a summary of the research question and the statistical tool applied to answer the research questions.

**Table 3.3 Summary of Statistical Tools Used to Answer Basic Questions and Justification for Using the Tool**

Research Question related to:	Statistical tool applied	Justification for application of major statistical tools
Generation of technology	Frequencies, mean values and t-test	t-test was used to compare means of the two groups of respondents
Factors in selecting	Mean, one way ANOVA	ANOVA was use to compare the mean values among the four colleges
Integration of technology	Frequencies, mean values and t-test	t-test was used to compare means of the two groups of respondents
Learner support system	Percentages, Chi-square	Chi-square was used to see the degree of agreement between sets of responses.
Problems confronted	Mean, one way ANOVA	ANOVA was use to compare the mean values among the four colleges
Government initiatives	Mean, one way ANOVA	ANOVA was use to compare the mean values among the four colleges
Attitude	Gross mean, means and t-test	Gross means help in depicting the overall information and the t-test was used to compare mean values between the two groups
	Pearson's R. Correlation	To correlate attitude variables with independent variables (age, sex, academic status, specialization and year of study)

## CHAPTER FOUR

### PRESENTATION AND ANALYSIS OF DATA

In this section, data collected from both the primary and secondary sources of data are presented, analyzed and interpreted. It is discussed in different parts where both respondents' characteristics and issues related to practices and problems of technological interventions in distance learning are seen in details. Generation of technology, factors considered in choosing technology for the DL program, integration of existing technology with instructional design elements, problems encountered in using technology in DL, government initiative, learner support system, technological capability and attitude of students and academic staff towards technology are elements which are discussed in detail in the issues related to the theme of the research.

A total of 190, 95% of the whole samples (200), respondents who filled out the questionnaire and returned were included in this section for analysis. These were divided in two major and important parts, academic staff and students to discuss some aspects of the study separately. Respondents included in academic staff were: deans, coordinators, experts and tutors. Accordingly, 75 academic staff and 115 students were included. Since the study was aimed to deal with technological interventions in DL, student respondents were targeted from places distant from the head of the learning center, Addis Ababa. Consequently, students residing in Hawassa, Adama and Bahir Dar were included.

Statistical Package for Social Sciences (SPSS) software was used to get the outputs of the numerical analysis summarized in tables in the following parts of the chapter. To this effect, statistical techniques like counts, percentages, means, Chi-squares, t-tests and one way ANOVA were used to analyze the data summarized.

The chapter presents the analysis and presentation part in nine major sections, namely (4.1) characteristics of respondents (4.2) Generations of Technology, (4.3) Factors Considered in Choosing Technologies (4.4) Integrating Existing Technology with Instructional Elements (4.5) Technology and Learner Support System (4.6) Institutional Technology Capability (4.7)

Government Initiatives in Supporting Technology Application in DL (4.8) Problems Encountered in an Attempt to Use Technology and (4.9) Attitude towards Technology Related Issues. A thorough discussion of both sections is presented hereunder.

#### 4.1 Characteristics of Respondents

The following is a discussion of the characteristics of the respondents who participated in the study.

##### 4.1.1 Age Profile of Respondents

The subsequent figures, Fig 4.1 and Fig 4.2, summarize the age profile of respondents in two different groups. One shows that of academic staff and the other of students both of which are discussed in reference to their colleges/universities.

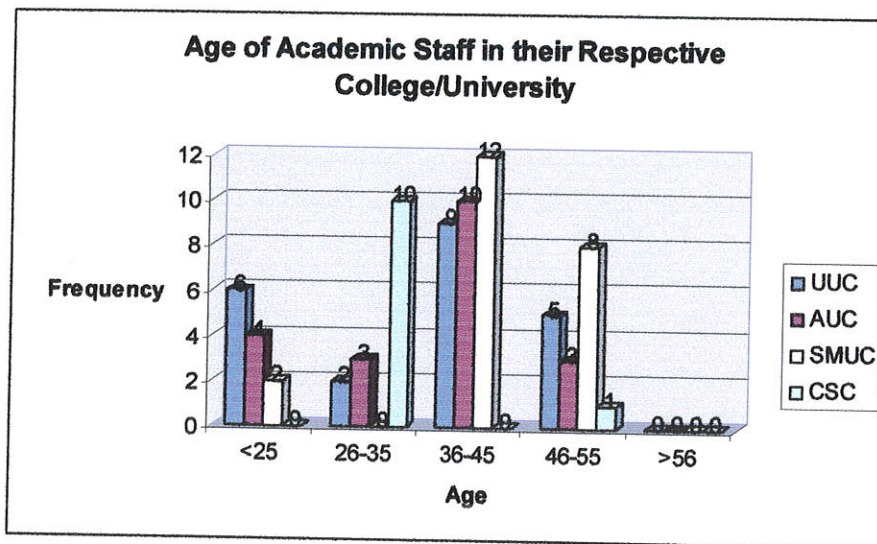
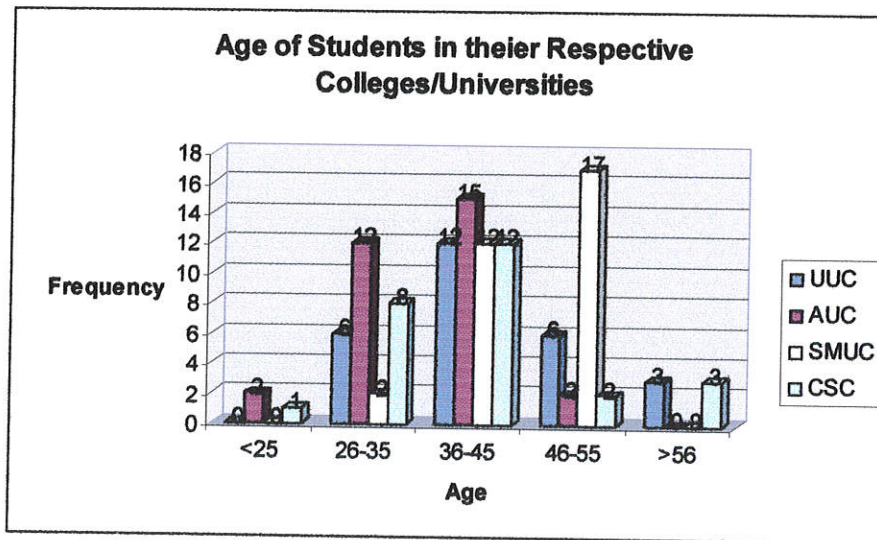


Fig 4.1 Graphic Representation of Age Profile of Academic Staff

As can be seen from the above graph, many (41.33%) of the respondents belong to the age group 36-45 years followed by 46-55, 26-33, less than 25 and greater than 56 years in their respective order. Though none of the respondents was older than 56, it can be said that the distribution is more in the matured age category. Unity University College is represented by more youngsters than the others. A relatively fair distribution among the age groups is seen in all the colleges except for Civil Service College where 90.09% of the respondents belong to the age group 26-35 years and only one in the group 46-55 years.

This indicates that respondents of the academic staff are mature enough to give relevant information for the purpose of the study enriched by their valuable experience of both the DL system and their lives.

The following graph summarizes the age profile of learners of the four colleges as the data collected from the regional center depicted.

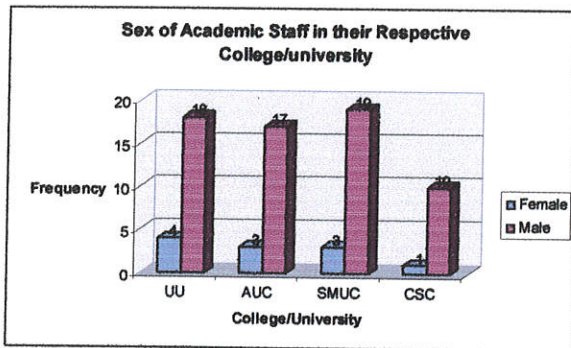


**Fig 4.2 Graphic Representation of Age Profile of Students**

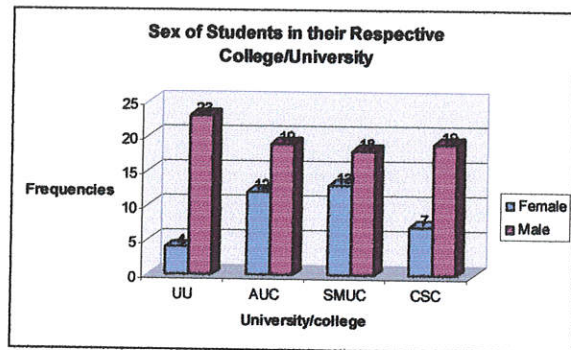
Here again, the majority of the respondents are in the age category 36-45. Expectedly so, many of the student respondents are aged. The graph above depicts that 73.04% of the respondents are older than 36 years which does not happen to be the case in the regular conventional face-to-face learning. It is interesting to note the presence of 6 respondents who are above 56. This ensures one of the characteristics of distance learning - that it is life long learning and could benefit anyone in any age group (Keegan, 2000:20). Hence it can be said that the colleges/universities are opening some rooms for the older people to attend their lessons without necessarily being in the institutions' compounds.

#### **4.1.2 Sex Profile of Respondents**

Parity of esteem for men and women is one of the major characteristics of distance learning (Keegan, 2000:20). The following graphs and discussions may indicate whether this fact was a practice in distance learning colleges/universities of Addis Ababa.



**Fig 4.3 Graphic Representation of Sex Profile of Academic Staff**



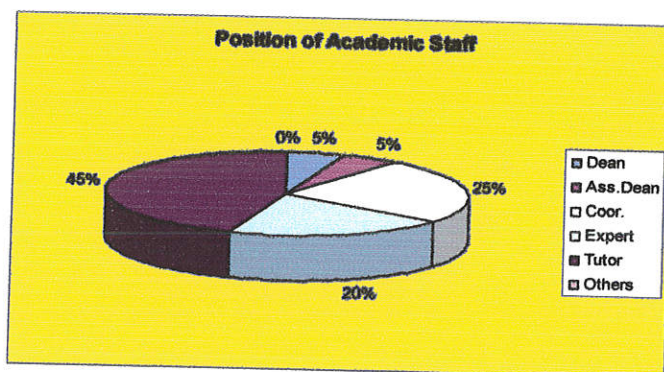
**Fig 4.4 Graphic Representation of Sex Profile of Students**

Only an insignificant contribution of female was seen as members of the academic staff for their share depicted only 14.67% of the total respondents. It was male dominated. Though this may not have anything to do with DL directly, a fair share might work as a motivation for female learners who might want to consider them as role models.

Close matches between the number of female and male students was seen in Saint Mary's University College. Only 14.81% of the respondents from Unity University were female. In general terms, 31.30% of the respondents were female which still happens to be lesser for maximizing one of the benefits of DL. The need for working towards increasing the number of female learners emanates from the fact that these parts of the society, particularly in the rural areas, might shoulder housewife responsibilities and do not get the chance to attend the conventional face-to-face colleges/universities.

#### 4.1.3 Academic Position Profile of Academic Staff

The pie chart in the next page summarizes the position of academic staff in their respective colleges/universities.



**Fig 4.5 Graphic Representation of Position Profile of Academic Staff**

From the chart above, we could see the integration of the very important position holder respondents to meet the purpose of the study. Accordingly, experts (45%), coordinators (25%), experts (20%), deans (5%) and assistant deans (5%) comprised the respondents participating in the study.

#### 4.1.4 Experience and Salary Profile of Academic Staff

Two other important characteristics one needs to deal with when talking about the background of respondents are salary and experience. The following table summarizes the salary and experience of the academic staff in their respective colleges/universities.

**Table 4.1 Frequency and Percentage Representation of Salary and Experience Profiles**

College	Experience	Salary			Total
		1501-2000	2001-2500	Above 2501	
UU	<5	3	3	-	6(27.27%)
	6-10	-	-	2	2(9.10%)
	11-15	-	3	9	12(54.53%)
	>16	-	-	2	2 (9.10%)
<b>Total</b>		<b>3(13.63%)</b>	<b>6(27.27%)</b>	<b>13(59.10%)</b>	<b>22</b>
AUC	<5	6	-	0	6(30.00%)
	6-10	-	-	5	5(25.00%)
	11-15	-	-	6	6(30.00%)
	>16	-	-	3	3(15.00%)
<b>Total</b>		<b>6(30.00%)</b>	<b>-</b>	<b>14(70.00%)</b>	<b>20</b>
SMUC	<5	1	-	1	2(9.10%)
	6-10	-	6	3	9(40.91%)
	11-15	-	-	6	6(27.27%)
	>16	-	-	5	5(22.72%)
<b>Total</b>		<b>1(4.55%)</b>	<b>6(27.27%)</b>	<b>15(68.18%)</b>	<b>22</b>
CSC	<5	-	-	3	3(27.27%)
	6-10	-	6	1	7(63.64%)
	11-15	-	-	1	1(9.09%)
	>16	-	-	-	-
<b>Total</b>		<b>-</b>	<b>6(54.55%)</b>	<b>5(45.45%)</b>	<b>11</b>

As can be seen from the Table 4.1, 47 (62.67%) of the respondents were paid above 2501 which happens to be a fair one with a reference to the compensation system in the education sector of the country. Out of these, 33 (70.21%) were those who had an overall experience of

11 years and above. One can deduce from this fact that the merit based on experience in the colleges/universities was applicable. These can play their significant role for the development of distance learning as the more one gets extrinsic motivation like remunerations, the less he/she will be dissatisfied in the work he/she does. Giving credit for the number of years one has served can also play a vital role in boosting the morale of the staff canceling some of the undesirable results of age factors.

#### 4.1.5 Academic Status and Area of Specialization of Respondents

Just like the conventional face-to-face learning, distance learning requires well qualified, competent and committed human resources. The following charts, therefore, give insights on the where-about of the colleges/universities included in the study in this regard.

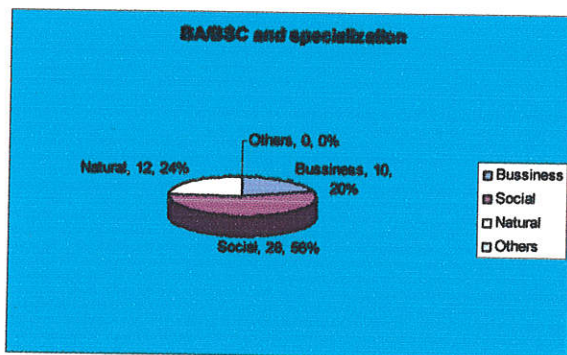


Fig 4.6 Graphic Representation of Position and BA/BSC

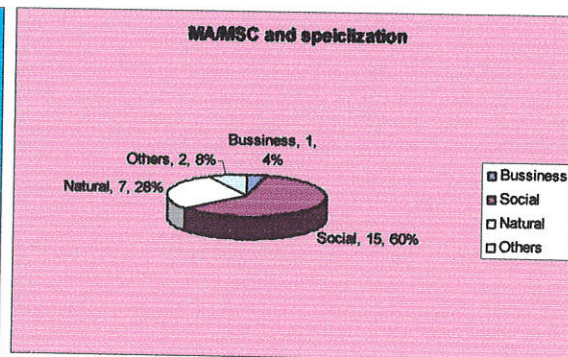


Fig 4.7 Graphic Representation of Position and MA/MSC

As can be seen from the graphs above, 66.67% of the respondents were BA/BSC holders and the rest were MA/MSC holders. This integration is very important input for the colleges/universities to provide learners with valuable information from what they learn/acquired from their studies.

The education of the academic staff, though dominated by social (56% of degree holders and 60% of second degree holders) was also composed of different major sections. No surprise that this was the fact for many of the courses provided include the help of people who have specialized in this field.

Under this section data collected using both a questionnaire and an interview related to the practice and problem of technological intervention are analyzed and interpreted in details. There are ten major sub-sections summarized and included in this discussion.

## 4.2 Generations of Technology

There has been a paradigm shift in the advancement of technology applications in the education system. Owing to the separation of the learner and the instructor with time and place, its growth and application have significantly been recognized in the distance learning system. There are five recognized generations in the distance education (Willems, 2005), each of which was valuable in its particular time it was being used.

### 4.2.1 Technologies Being Applied

As discussed above there are different technological options for DL institutions to use in their program. Table 4.2 summarizes the responses from the respondents regarding generations of technology elements being used in the universities/colleges.

**Table 4.2 Frequencies and Mean Distribution of Some Aspects of Generation**

No.	Item Description	Respondents												t
		Academic Staff (N=75)						Students (N=115)						
		AL (5)	MO (4)	ST (3)	RA (2)	NE (1)	X*2	AL (5)	MO (4)	ST (3)	RA (2)	NE (1)	X*2	
1	Printed Material	66	9	-	-	-	4.88	101	10	-	4	-	4.81	0.93
2	Radio broadcasting	-	-	6	21	48	1.44	3	15	3	43	51	1.92	-3.40**
3	Audio cassettes	-	26	4	15	30	2.34	6	48	17	19	25	2.92	-2.97**
4	Video tapes	-	21	3	9	42	2.04	6	52	7	7	43	2.75	-3.37**
5	Television	-	3	7	9	56	1.43	10	40	4	10	51	2.55	-5.78**
6	Audio-conferencing	-	8	-	3	64	1.36	7	21	10	26	51	2.19	-4.68**
7	Video-conferencing	-	4	3	6	62	1.32	3	27	-	34	51	2.19	-4.77**
8	Electronic Mail (E-mail)	4	9	6	11	45	1.88	10	12	4	35	54	2.03	-0.80
9	Computer-conferencing	-	4	-	3	68	1.20	10	14	4	33	54	2.07	-5.15**
10	CD-ROM*1	-	20	-	3	52	1.84	3	22	8	31	52	2.09	-1.31
11	World-Wide-Web (WWW)	-	13	4	3	55	1.67	10	8	-	49	48	1.98	-1.76

[4.50-5.00=Always, 3.50-4.49= Mostly, 2.50-3.49= Sometimes, 1.50-2.49=Rarely, 1.00-1.49=Never]

\*1=Compacted Disc Read Only Memory \*2=Calculated Means across Cells

\*\*=Statistical Difference among Mean Values at  $\alpha = 0.05$  and  $df = 188$

As can be seen from Table 4.2, printed materials were always the choice of technology in the colleges/universities for both the academic staff and students assured the fact with mean values of 4.88 and 4.81 respectively. There was no statistical significant difference between the two responses as well. This depicts that the correspondence form of education where students

get printed materials and assignments in mails and do their studies still rules in the education system of the colleges/universities. Though it is not enough by itself, its application is believed to allow the production and distribution of large quantities of teaching to geographically isolated learners (Willems, 2005).

As to radio broadcasting, it was never used for the teaching learning process in the colleges/universities as indicated by the academic staff (1.44) and rarely used according to students as confirmed by a mean value of 1.92. This indicates that one important element of the second generation is missing. Regarding the usage of audio cassettes, respondents indicated that it was rarely and sometimes used for the mean values depict this with 2.34 and 2.59. There was a significant difference between the two groups of students with students assuring its application to a greater extent. Video tapes were also only sometimes used in the DL as described by students with a mean value of 2.75. The academic staff did not agree that it is being used even sometimes and the responses resulted in significant difference in the means. The difference between the responses of the two groups of respondents may result from the very fact that the learners are separated by place from the academic staff and might have already started using some technology related materials to support their studies. Though the second generation was enriched by print materials, the three elements: radio broadcasting, audio and video cassettes are its main components (Wellems, 2005). The result from the responses of the respondents did not reveal their application to a greater extent. There are some important benefits that a distance learning institution gets from using technologies of the second generation such as radio broadcasting, audio cassettes and video tapes discussed above. It happens to be true in the universities that lessons that can not be provided using print materials alone can not be given with the aid of these technologies. According to Melton (2002), the aforementioned technologies enable the colleges/universities to provide lessons that require archive materials, speeches and discussions. Missing these elements might hamper the best provision of education in the DL system.

Important elements in the third generation include the application of television, audio and video conferencing in the DL system (Welliems, 2005). Though students believed that it was applicable sometimes (2.55), the academic staff still did not believe that it was that applicable

for the mean value for the group was found to be 1.43. Audio conferencing and video conferencing being the other components of technologies in the third generation, they were never used as far as the academic staff was concerned as their mean values for the two were 1.36 and 1.34 respectively. Students, however, rated these elements a bit higher with mean value of 2.19, each of which was in the rarely used category. These still were not found to be highly applicable in the colleges/universities. There might be lessons which need the visual mode of delivery. Since the colleges/universities did not use the above forms of technology, they might find it difficult to teach lessons requiring visual effects. This might result in having a system which is not backed by efficient communication, flexibility and much experience of the student as stated by Keegan (1995).

Huge opportunities in DL were presented by the introduction of more computerized systems in the third generation (Moore and Thompson, 1990). Respondents indicated that E-mail was only rarely used for teaching learning process. The mean values from their responses were found to be 1.88 and 2.03 which happened to be statistically insignificant in the t-test. Computer conferencing was believed to be never used as responded by the academic staff for the computed mean value happened to be 1.20. Students, however, argued that it was used rarely in the colleges/universities. Their response resulted in a mean value of 2.07. It could be said that the fourth generation is not very much applicable in the colleges/universities. Some advantages that this generation rendered to the world have not been utilized here. These technologies could have helped in reducing the isolation of learners from the other parts of the teaching learning society at a distance i.e. other learners, institutions and tutors. In support of this Minoli (1996: 106) underlines the need of the technologies in this generation for the collaboration learning practices.

As far as CD-ROMS are concerned, they were only used rarely as depicted by both the academic staff and students with mean values of 1.84 and 2.09 respectively. The World Wide Web (WWW) was also used only rarely in the colleges/universities for the mean computed from the respondents confirm this with values of 1.67 and 1.98. As can be seen from the t-test values, most of them are statistically different. This is mainly due to the distance between the two groups and lack of communication between the two sets of respondents. The technologies

could have given access to primary sources of information in most media (print, graphics, photographs, audio, and video) through streaming (Pandey, 2007: 155 and Melton, 2002).

The responses from the interview also revealed the fact that the DL system was print dominated with some level of application of the second generation. The elements indicated to be used in the second generation as found in the interview were audio cassettes and video tapes. This was confirmed to be used only to an occasional level in the responses found from the respondents in the questionnaire.

#### 4.2.2 Types of Print Based Technologies

A college/university applying print based technology should use varied ranges of print type technologies to enhance the teaching learning process. Sticking to only one type might not end up with the desired outcome as far as providing quality distance learning is concerned. The following table summarizes responses found from respondents on the application of the different types of technologies in print system.

**Table 4.3** Frequencies and Mean Distribution of Some Aspects of Types of Prints

No	Item	Respondents												t
		Academic Staff (N=75)						Students (N=115)						
		AL (5)	MO (4)	ST (3)	RA (2)	NE (1)	X*1	AL (5)	MO (4)	ST (3)	RA (2)	NE (1)	X*1	
1	Courseware leaflets	25	10	18	15	7	3.41	25	48	36	6	-	3.80	-2.41**
2	Text books	43	20	4	1	7	4.21	37	56	22	-	-	4.13	0.59
3	Written assignments	39	25	7	4	-	4.32	26	58	21	10	-	3.87	3.53**
4	Study guides	18	9	25	9	14	3.11	16	34	38	20	7	3.28	-0.94
5	Self study materials	28	16	13	14	4	3.67	13	48	24	23	7	3.32	1.95
6	Journals	10	11	7	24	23	2.48	7	26	41	25	16	2.85	-2.02
7	Articles	5	10	10	24	26	2.25	10	17	30	37	21	2.63	-2.11**
8	Reference books	4	17	14	21	19	2.55	10	16	40	30	19	2.72	-0.99

[4.50-5.00=Always, 3.50-4.49= Mostly, 2.50-3.49= Sometimes, 1.50-2.49=Rarely, 1.00-1.49=Never]

\*1=Calculated Means across Cells, \*\* = Statistical Difference among Mean Values at  $\alpha = 0.05$  and  $df = 188$

As can be seen from Table 4.3, courseware leaflets were sometimes used as it was confirmed by a mean value of 3.41 by the academic staff. It, however, was mostly used as depicted by students with a mean value of 3.80. Their responses were found to be significantly different. Both students and the academic staff assured the fact that text books were mostly used in the colleges with a mean value of their responses 4.21 and 4.13 respectively. There was no significant difference between the mean values of the two respondents. Item 3 of Table 4.3

confirmed the application of written assignments in the colleges/universities for the mean value of the academic staff's response was 4.32 and that of students' was 3.53. Study guides are one of the important elements a DL college/university has to apply along with the other forms of print technologies for the student does not have the tutor with him every time. Their application in the colleges/universities was found to be only sometimes as responded by both the academic staff and students with mean values of 3.11 and 3.28 respectively. The harmony between the responses of the two groups was indicated by a t-test value of -0.94 which shows statistical insignificance between the two responses. Another important print technology a college/university can use is the self study materials which logically are very important with the consideration of the continuous follow up of tutors. In this regard the responses from the respondents depicted that they were used either mostly or sometimes in the colleges/universities. There is no statistically significant difference between the mean values of the respondents which happened to be 3.67 and 3.32 for the academic staff and students respectively.

Journals being another important print based technology are believed to be very vital for the teaching learning progress of a DL. Both local based and international publications are available to be used for distance learners and tutors to supplement teaching. They, however, were rarely used as confirmed by the academic staff with a mean value of 2.48 and only sometimes used as responded by students with a mean value of 2.85. As far as the application of articles as a means of supplementing the print based technology is concerned, it was found to be rarely used as indicated from the responses from the academic staff with a mean value of 2.25 and only sometimes used as shown from the responses of students with a mean value of 2.63. Reference books were used as alternatives in the print based DL only sometimes. The responses found from both the academic staff and students depicted this fact with mean values of 2.55 and 2.72. There was no significant difference between the mean values of the two groups' responses.

#### **4.2.3 Purposes for which Elements of the Second Generation Are Being Used**

There should be some basic purposes of using technologies of the second generation. They meet the very reason they were required to be applied in the DL program if they address some

important items the first generation could not give answers to. The following table summarizes responses from both groups regarding the purpose of applying the second generation technologies in the colleges/universities.

**Table 4.4 Frequencies and Mean Distribution of Some Aspects of Purposes of Technologies in the Second Generation**

No	Item Description	Respondents												t
		Academic Staff (N=52)						Students (N=108)						
		AL (5)	MO (4)	ST (3)	RA (2)	NE (1)	X*1	AL (5)	MO (4)	ST (3)	RA (2)	NE (1)	X*1	
1	Documentaries	16	17	6	3	10	3.50	17	34	42	6	9	3.40	0.45
2	Archive materials	10	8	26	-	8	3.23	3	38	52	6	9	3.19	0.26
3	Discussions	12	11	20	9	-	3.50	15	45	29	13	6	3.46	0.21
4	News bulletins	4	4	18	15	11	2.52	3	29	15	48	13	2.64	-0.64
5	Speeches	8	7	6	16	15	2.56	3	13	32	46	14	2.49	0.35

[4.50-5.00=Always, 3.50-4.49=Sometimes, 2.50-3.49=Occasionally, 1.50-2.49=Rarely, 1.00-1.49=Never]

\*1=Calculated Means across Cells, df = 188 α = 0.05

There were 52 academic staff and 108 students who rated either for sometimes or mostly or always as far as the application of elements of the second generation were concerned. Using technologies like radio broadcasting, audio cassettes and video tapes in DL for teaching lessons that involve documentaries is valuable (Melton, 2002). To this effect, the technologies were sometimes used to supplement teaching documentaries as indicated by the academic staff and sometimes used for students for the mean values from the responses of the two groups were found to be 3.50 and 3.40 respectively. Archive materials were taught using the second generation technologies only sometimes for the mean values calculated from the responses of the academic staff and students were 3.25 and 3.19 respectively. Discussion, being a vital element of teaching learning, is another form of learning for which the second generation could be used. The technologies were mostly applied to carry out lessons in discussion form as confirmed by the academic staff with a mean value of 3.50 and only sometimes used as shown from the responses of students with a mean value of 3.46. These technologies were used for the purpose of providing news bulletins only sometimes. The mean value responses from both groups were 2.52 and 2.64. Speeches, particularly in language classes, could be supplemented by the above technologies to a greater extent. They could also be used in other subjects where recorded speeches are found to be very important. They were, however, only sometimes supplemented by the technologies or rarely supported by the technologies as responded by

the academic staff and students whose mean responses were 2.56 and 2.49 respectively. There was no significant difference between the responses of the mean values of the two groups in all aspects of the elements listed as purposes of the second generation.

### **4.3 Factors Considered in Choosing Technologies**

A technology available in the market should not be used only because it is there to be used. A thorough analysis must be used before it actually is used in the DL program. Here, it is worth bearing in mind that print is also one form of technology as discussed in the above sections. A skeleton called ACTIONS for assessing some of the factors was applied as a frame to see its application in the colleges/universities (Harry and Khan, 2000). The following discussions summarize the responses of the academic staff as to what extent they are being applied in their respective colleges/universities.

#### **4.3.1 Organizational Issues**

Organizational issue is one of the major factors an institution has to take into account before using any form of technology. Four important elements that exist within this macro concept are opportunities, threats, organizational barriers and organizational requirements.

**Table 4.5 Mean Distribution and One-way ANOVA Results of Some Aspects of Factors Considered in Choosing Technologies (Organizational Issues)**

No.	Item Description	Mean Values				F
		UU *1 (N=22)	AUC*2 (N=20)	SMUC*3 (N=22)	CSC*4 (N=11)	
<b>Opportunities</b>						
1	Working government policy	4.45	3.60	3.18	4.54	7.02
2	Students mental preparedness	4.09	3.50	3.50	3.91	1.20
3	Students' positive attitude	4.05	3.65	3.14	4.00	4.16
4	Availability of materials	3.77	3.85	3.64	3.91	0.30
5	Reasonable cost of technology materials	4.36	4.25	3.77	4.18	2.03
6	Availability of funds	3.77	2.80	2.95	3.36	2.72
<b>Threats</b>						
7	Poor infrastructure	4.09	3.35	3.18	4.55	6.59
8	Negative attitude of students	3.91	2.95	3.36	2.82	4.49
9	High cost of technology materials	4.27	2.80	3.27	3.73	7.28
10	Lack of support from the government	4.09	2.70	2.95	4.18	7.69
<b>Organizational Barriers</b>						
11	Negative attitude of tutors	3.91	4.25	3.00	3.09	8.34
12	Negative attitude of administrative staff	3.91	4.20	3.55	3.18	3.34
13	Knowledge/skill of tutors	4.14	3.35	3.55	3.45	2.29
14	Knowledge/skill of administrative staff	3.91	3.70	3.18	3.18	1.40
15	Lack of working technology plan	3.68	4.20	3.23	4.00	3.13
16	Inadequate financial support	4.14	3.95	3.45	4.27	3.32
17	Poor supply of facilities	4.00	4.25	3.32	4.09	4.83
<b>Organizational Requirements</b>						
18	Commitment of the management	4.23	3.30	3.77	4.55	3.62
19	Proper resource availability	4.55	3.50	3.45	4.64	9.08**
20	Readiness for change	4.18	2.75	3.59	4.64	8.81**

[4.50-5.00=Strongly Agree, 3.50-4.49=Agree, 2.50-3.49=Uncertain, 1.50-2.49=Disagree, 1.00-1.49=Strongly Disagree]

\*1=Unity University, \*2= Alpha University College, \*3= Saint Mary's University College, \*4= Civil Service College

\*\*=Statistical Difference among Mean Values at  $\alpha = 0.05$  and  $df = 74$

Items 1 through 6 of Table 4.5 are about the opportunities that exist within the external environment and that an institution has to take into account. The only institution that was uncertain that working government policy as a factor has been considered in selecting the technologies was SMUC for the mean value of the respondents was found to be 3.18. Two others, UU and AUC, agreed that they have considered this factor. Respondents from CSC strongly agreed that the factor has been considered before using technologies in their college as it was depicted by a mean value of 4.54. The responses from the academic staff of all the colleges/universities indicated that the factor related to students' mental preparedness has agreeably been considered. UU, AUC and CSC agreed with the fact that their institution checked on whether there existed positive attitude of students towards the technology in place for application for the mean values depicted this with 4.05, 3.65 and 4.00 respectively. Respondents of SMUC were uncertain about it as the calculated mean was found to be 3.14. All the colleges/universities agreed that one of the factors they have considered before

applying any sort of technology in their system was its availability as confirmed by mean values of their responses 3.77, 3.85, 3.64 and 3.91 in their order from left to right in Table 4.5.

Reasonable cost of materials related to the technology to be applied was also another factor the colleges/universities checked on before applying that technology in their institution. Question about whether the colleges/universities considered the existence of funds in the external organization as a factor in choosing the technologies was raised. The responses from the respondents showed some variation as UU respondents said they agree confirming it with a mean value of 3.77 and the rest said they are not certain about it with mean values of 2.80, 2.95 and 3.36 for AUC, SMUC and CSC respectively. This implies that the majority of the factors related to considering opportunities that exist in the external environment have been capitalized. This would help in maximizing the continuation of the technology to be used in line with the opportunities (Yared, 2001; Shreiber, 1998; Bates, 2003).

Items 7 through 10 of Table 4.5 were questions asked to assess whether the colleges/universities considered some of the external threats before applying any form of technology in their colleges/universities. Poor infrastructure in the country being one of the major threats that needs to be considered before applying a technology, two of the four colleges, UU and CSC, have managed to take this into account and made sure that a supporting infrastructure was available for a technology in place to be used for the mean value from the respondents in their respective college/university were 4.09 and 4.55 respectively. AUC and SMUC were uncertain as to whether or not this factor has been considered. A threat called negative attitude of students is another factor worth looking into before applying a technology. It would be worthless for an institution to use a technology with the majority of its students having a negative attitude towards it. In this regard, the only university that agreed that this factor has been considered was UU for the mean value from the respondents in the university was found to be 3.19. The mean values of the other three were in the range of uncertainty. This implies that much emphasis has not been given by the colleges/universities in checking whether there is a negative attitude of students towards the technology to be used. Prevailing high cost of technology materials might happen to be one of the threats an organization faces as and when it tries to introduce a new technology in its DL program. While

UU and CSC agreed that this was one of the factors they took into account before applying the technology, the others were uncertain about it. If there is lack of support from the government, the success of applying an emerging technology in the DL would be in question. To this effect, a DL institution has to make sure whether or not this threat exists. Here again, only UU and CSC made this assessment as the mean value from the responses of their colleges confirmed this with 4.09 and 4.18 respectively. The other two have not taken significant steps in considering the factor before applying any form of technology. In summary, there exist many uncertainties in seriously considering some of the threats that an institution has to consider before choosing a technology for application. According to Sahab (2003), this might end up in frustration as and when the threats begin to hamper the application of the technology in the DL.

Items 11 through 17 of Table 4.5 are about some of the internal organizational barriers an institution has to take into consideration before choosing a technology to apply in the DL program. It is unlikely that a tutor with a negative attitude towards the technology in plan to be used would effectively use it and maximize its benefit in the teaching learning process. Two colleges/universities, UU and AUC, have indicated that this was one of the factors they checked before applying an emerging technology as confirmed by mean values of 3.91 and 4.25 respectively. SMUC and CSC respondents indicated that they were not sure as to whether their colleges/universities apply this or not. Another possible barrier from the organization is the negative attitude of the administrative staff. Except for the CSC, the other institutions have agreed that this was among the factors considered in choosing a technology ahead of its application as confirmed by mean values of 3.91, 4.20 and 3.55 in the colleges/universities UU, AUC and SMUC respectively. Knowledge/skill of tutors is another important element to be considered in the organizational barriers. UU and SMUC considered this as a factor in choosing a technology for the mean values of the two were 4.14 and 3.55 respectively. Respondents from AUC and CSC did not, however, feel like their universities/colleges considered this factor to a significant level as depicted with the mean values of 3.35 and 3.45 respectively. Another barrier is the reliance on the skill/knowledge of the administrative staff. This as a factor has been considered in UU and AUC. The mean values from SMUC and CSC proved the fact that

respondents from both colleges/universities were not certain whether or not skills/knowledge have been considered in the teaching learning process at a distance.

Lack of a working technology plan is among the factors one has to go through before selecting a technology to use. Without a sound consideration of this factor, chosen technologies might result in chaos in cases where they fail to operate or some sorts of complications start to be seen. In this regard, three colleges/universities, UU, AUC and CSC, argued that they check on whether they have the required technology plan or not before applying it with mean values 3.68, 4.20 and 4.00 respectively. SMUC respondents were not sure as to whether the factor was being considered. Checking on whether there is adequate financial support in the organization that could effectively take the college to the end and not be relinquished because of lack of financial support if a technology is applied is another important factor. The colleges/universities indeed made sure that they have sufficient financial support before they chose a technology to be used in their institution as confirmed by mean values from their respondents 4.00, 4.25, 3.32 and 4.09 in UU, AUC, SMUC and CSC respectively. The above discussions depict that many of the inter-organizational barriers have been considered as important factors in choosing a technology for application in the universities/colleges.

Items 18 through 20 of Table 4.5 are questions asked to investigate whether organizational requirements have been well-thought of before applying a technology in the colleges/universities. Like the above three discussed organizational issues, these also are important to be considered so that a chosen technology effectively meets its purpose. A significant level of commitment from the management is an essential factor in the organizational requirements. Except AUC, the other three colleges have indicated that this has been considered as a factor for the mean values are 4.23, 3.77 and 4.55. Checking on whether proper resources in the organization exist or not is another internal factor worth considering. In this regard, responses revealed that it has been considered as a factor except for SMUC where the mean value from the respondents was found to be 3.45 confirming uncertainty. The one-way ANOVA test for the group test indicated that there was a significant difference between the responses of the mean values of the colleges/universities. An application of a technology urges for readiness for change. UU, SMUC and CSC have considered this factor

while AUC was found to be uncertain. The ANOVA test showed that there existed a significant difference between the mean values of the different groups. Interview with deans revealed that many of the organizational factors in the colleges/universities have not been considered. Having gone through well organized organizational opportunities, threats, barriers and requirements is vital before selecting a technology to be used in the DL system (Sahab, 2003).

#### 4.3.2 Accessibility/Availability of Technology Materials

Checking on what technology is accessible/available for the audience is another important factor a college/university has to consider before choosing it for application. The following table summarizes issues related to this fact.

**Table 4.6 Mean Distribution and One-way ANOVA Results of Some Aspects of Factors Considered in Choosing Technologies (Accessibility/Availability)**

No.	Item Description	Mean Values				F
		UU *1 (N=22)	AUC*2 (N=20)	SMUC* 3 (N=22)	CSC*4 (N=11)	
Accessibility/Availability						
1	Learners	4.14	3.10	3.18	4.55	9.15**
2	Tutors	3.91	3.15	3.77	4.27	3.08
3	Administrative staff	4.00	3.10	3.41	4.09	3.15
4	Support staff	4.00	2.95	2.82	4.09	6.40
Location where Technology is Available						
5	Home	3.14	3.45	3.27	3.82	0.84
6	Local center	3.82	3.20	3.41	3.91	1.82
7	Educational institutions	3.95	2.90	3.18	3.91	3.51
8	Work place	3.77	2.45	3.14	4.09	7.90

[4.50-5.00=Strongly Agree, 3.50-4.49=Agree, 2.50-3.49=Uncertain, 1.50-2.49=Disagree, 1.00-1.49=Strongly Disagree]

\*1=Unity University, \*2= Alpha University College, \*3= Saint Mary's University College, \*4= Civil Service College

\*\*=Statistical Difference among Mean Values at  $\alpha = 0.05$  and  $df = 74$

Items 1 through 4 of Table 4.6 deal with factors a university/college has to consider as far as if the technology in plan to be used is accessible for the major stakeholders involved in the DL program. UU and CSC checked whether students have access to the technology to be used before applying it for the mean values from their respective respondents depicted this with 4.14 and 4.55. AUC and SMUC were not sure whether this factor has been considered before the technologies were chosen. The ANOVA test result was calculated to be 9.15 which showed the statistical significance difference among the mean values of the colleges/universities. Except for AUC, the other colleges/universities have confirmed the fact that accessibility of planned technology for tutors was thought ahead of time before considering it to be used for

the mean values from the respondents showed this with 3.91, 3.77 and 4.27. The fact that administrative and support staff should be considered as important elements affected by the application of the technology result in checking whether they have access to the technology or not. In this regard, the colleges, except AUC, considered the factor. In general, as it is suggested by Perraton and Moses (2004), the colleges/universities have taken significant steps in considering the accessibility factor which according to the writers is a key element.

Another important element related to the accessibility of the technology is the question: "Where is the technology accessible/available?" The closer the access of the technology to where the students/staff live, the higher the possibility of using it for the teaching learning process will be. To this effect, questions 5 through 8 of Table 4.6 were asked to assess whether these were among the factors to be considered lists of the colleges/universities. UU, AUC and SMUC were not sure whether the accessibility of the technology at home has been considered in choosing a technology for the mean values of the respondents showed this with 3.14, 3.25 and 3.27 respectively. CSC had this in its checklists for factors checking. Local technology centers are also alternatives for learners to maximize the accessibility of technologies. Before using a technology, it is advised that institutions check on whether these forms of centers exist or not. UU and CSC have managed to incorporate this factor with the others while AUC and SMUC have shown uncertainty with mean values 3.82, 3.91, 3.20 and 3.41 respectively. Same was found to be true as far as considering the factor of educational institutions being available to help in having access to the technology as that of local technology centers. Work places are also options that could be considered for the access and need to be checked by the universities/colleges. Here again only two of the four institutions have shown its being a factor, UU and CSC. Others were uncertain or were neutral in this regard. According to the response of the deans in the interview, access was one of the factors the colleges/universities took into account. In summary, many of the factors worth considering in checking the possible places learners/tutors could get access to are indicated with much level of uncertainty. They, however, are among the cornerstones in smoothly running the application of technology (Bates, 2003).

### 4.3.3 Cost of the Technology

Cost is among the most crucial determinant factors in choosing a technology to be used in DL system. An institution has to make sure that the technology to be used is feasible cost wise from different angles. The following table summarizes responses from the academic staff related to this matter.

**Table 4.7 Mean Distribution and One-way ANOVA Results of Some Aspects of Factors Considered in Choosing Technologies (Cost)**

No.	Item Description	Mean Values				F
		UU *1 (N=22)	AUC*2 (N=20)	SMUC*3 (N=22)	CSC*4 (N=11)	
Cost						
1	Administrative equipment	3.86	2.70	3.82	4.18	6.51
2	Instructional equipment	3.73	3.30	3.77	4.27	2.33
3	Maintenance	3.64	2.95	3.41	4.64	4.92
4	Support system	3.77	3.05	3.45	3.91	2.01
5	Administrative professional development	3.59	2.95	3.50	4.18	3.55
6	Instruction related professional development	4.05	3.40	3.23	4.36	3.56
7	Dedicated technology personnel	4.23	3.30	3.45	4.27	3.39
8	Cost per learner	4.05	2.90	3.32	3.91	3.43

[4.50-5.00=Strongly Agree, 3.50-4.49=Agree, 2.50-3.49=Uncertain, 1.50-2.49=Disagree, 1.00-1.49=Strongly Disagree]

\*1=Unity University, \*2= Alpha University College, \*3= Saint Mary's University College, \*4= Civil Service College df = 74  $\alpha = 0.05$

As can be seen from Table 4.7, the institutions except AUC have taken the factor related to the administrative equipment cost of the technology material into account for the mean values of their respective respondents depicted this with 3.86, 3.82 and 4.18. The same was true with the other cost factor called instructional equipment where UU, SMUC and CSC respondents agreed with the fact that it was considered as a factor with mean values 3.73, 3.77 and 4.27 respectively. Maintenance cost is another major factor related to cost and only two institutions, UU and CSC, have confirmed its being a factor with mean values of 3.64 and 4.64 respectively. AUC and SMUC have shown neutrality in this regard. A sound support system requires some cost to be invested in it as and when new technologies are used. This as a factor was considered by only UU and CSC where the mean values were found to be 3.77 and 3.91. Elsewhere, no certainty has been shown. Administrative and instruction related professional developments are also part of the cost factors an institution has to think-out ahead of time. The first being a factor as agreed by the respondents of the three colleges, UU, SMUC and CSC, with mean values 3.59, 3.50 and 4.18 respectively, the second was a factor only in two of the four institutions, UU and CSC followed by the uncertainty of AUC and SMUC. Forming dedicated technology personnel requires a great deal of investment. It, therefore, is advised to

make sure that the cost for this is available before diving in to it. Here again, this was considered as a factor in UU and CSC only as depicted by mean values 4.23 and 4.27. Cost per learner was also a factor for the above two and not for AUC and SMUC for the mean values of these two range in the category of uncertainty. Issues related to cost were also indicated in the interview to be considered as factors in selecting a technology. Bates in Yared (2001) strongly underlines the serious consideration of the cost factor before applying a technology in DL system. It, however, happens to be not the case in many of the cost factors in the institutions.

#### 4.3.4 Other Factors in Choosing Technology

There are some other factors a university/college has to consider before applying/using a technology in its DL program. Among these are the teaching learning process, interactivity, user friendliness, novelty and speed. The following table summarizes the responses found from the academic staff regarding these factors.

**Table 4.8 Mean Distribution and One-way ANOVA Results of Some Aspects of Factors Considered in Choosing Technologies (Others)**

No.	Item Description	Mean Values				F
		UU *1 (N=22)	AUC*2 (N=20)	SMUC*3 (N=22)	CSC*4 (N=11)	
Others						
1	Learning needs to be developed	4.27	3.20	3.50	4.00	7.07
2	Instructional strategies to be developed	4.09	3.15	3.14	4.27	5.17
3	Kind of instruction the technology enables	3.95	3.10	3.36	4.18	3.69
4	Ease of the technology (user friendliness)	4.09	3.05	2.95	3.81	4.75
5	Novelty	3.64	3.05	3.23	4.27	3.89
6	Duration courses can be mounted	3.40	3.25	3.91	4.00	2.77
7	Duration courses can be changed	3.18	3.10	3.64	3.64	1.12
8	Possibility that objectives dictate media	3.45	2.95	3.18	3.82	1.73
9	Convenience of the technology	3.68	3.05	3.59	4.45	4.45
10	Pressure from the government	3.32	2.70	3.95	3.91	6.34
11	Conformability	3.54	2.90	3.05	4.45	8.46

[4.50-5.00=Strongly Agree, 3.50-4.49=Agree, 2.50-3.49=Uncertain, 1.50-2.49=Disagree, 1.00-1.49=Strongly Disagree]

\*1=Unity University, \*2= Alpha University College, \*3= Saint Mary's University College, \*4= Civil Service College

df = 74     $\alpha = 0.05$

Learning needs to be developed are among the critical factors to be considered in selecting a technology for an application in an institution. If the learning need to be developed does not need much application of technology, applying it would simply mean wastage of effort, time and creates unnecessary complications. In this regard, except for AUC, the rest have taken this into account in choosing a technology as confirmed by mean values 4.27, 3.50 and 4.00 for UU,

SMUC and CSC respectively. Instructional strategies to be developed should also be included in the factors under considerations. UU and CSC had this as a factor as confirmed by mean values 4.09 and 4.27 respectively. AUC and SMUC respondents have dilemma as to whether this was a factor of selection in their colleges/universities. The same thing was true with the kind of instruction the technology enables, existing as a factor in UU and CSC and uncertainty in the other two. The technology to be applied must be easy to be used by students/tutors. UU and CSC were the two colleges which seriously took this as a factor in selecting a technology for the mean values of these were 4.01 and 3.81 and the rest have not become sure about it. As to Sahab (2003), failure to do so might result in minimizing the enormous benefits we get from the technology.

Novelty as part of the factors refers to the newness of the technology. Two institutions, UU and CSC, have taken steps in considering novelty as a factor as it was indicated by the respondents with mean values of 3.64 and 4.27 respectively. Durations courses can be mounted and changed are both related to speed of updating. The closer we move to the fifth generation, the better is the speed of mounting and changing. Whatever the case might be, an institution has to make sure that these are important factors before using a technology. While UU and AUC respondents were not sure about the application of both factors, the others, SMUC and CSC have depicted that these were by mean values 3.91 and 4.00 for the first and 3.64 each for the second. Since technologies vary in their speed of implementation and flexibility, it is helpful to select technologies with high level of speed (Bates in Yared, 2001). The possibility that objectives dictate an application of a media is also a valuable factor. Some lessons may not require the application of a complex technology structure. Only CSC checked on this as a factor of choosing a technology for the mean value calculated from the responses in the college was 3.82. The rest were uncertain on the consideration of the factor. Convenience of the technology with whomever it is to be used is also important factor. Except AUC, the others have included this factor with the others discussed for the mean values for UU, SMUC and CSC were 3.68, 3.59 and 4.45 respectively. Checking on whether there is pressure from the government in applying or rejecting a technology is worth noting before choosing a technology. UU and AUC respondents have given no direction of yes or no. The

responses from SMUC and AUC confirmed that it was being considered as shown by values 3.95 and 3.91 respectively. Conformability lies within the factors to be considered. Two of the four, UU and CSC, considered this element as a factor as depicted by 3.54 and 4.45 respectively. According to Khan (2000), all these discussed elements need serious attention as and when a technology is selected/chosen for a DL program. An institution has to, without any doubt, be able to consider the factors brought for discussion in this section.

#### **4.4 Integrating Existing Technology with Instructional Elements**

The application of a sound technology is partially dependent on how well the technology could address the intended outcome. This section is a discussion of the analysis of some of the important elements of instructional technology. The important elements include: learning objectives, contents, delivery, interactivity and assessment.

##### **4.4.1 Technology and Learning Objectives**

A technology chosen has to support the learning objectives set to be met. Integrating a technology with what is intended to be achieved is very important. The following table summarizes responses given by respondents regarding the integration of a technology with DL objectives.

**Table 4.9 Frequencies and Mean Distribution of Some Aspects of Integration of Technology with Learning Objectives**

No.	Item Description	Respondents												t
		Academic Staff (N=75)						Students (N=115)						
		SA (5)	A (4)	U (3)	D (2)	SD (1)	X	SA (5)	A (4)	U (3)	D (2)	SD (1)	X	
1	Are defined as part of the instructional design	41	18	-	15	1	4.12	48	43	12	7	5	4.06	0.27
2	Are explicitly communicated to learners	43	18	7	6	1	4.28	31	65	11	5	3	4.01	1.94
3	Instructions include skills to meet the objectives	24	33	-	14	4	3.79	42	54	13	6	-	4.15	-2.43**
4	Instructions include knowledge to meet the objectives	31	24	-	13	7	3.79	48	46	17	4	-	4.20	-2.58
5	Instructions include experience to meet the objectives	17	28	11	16	3	3.53	23	65	16	7	4	3.83	-1.96
6	Related to real life experiences through examples	18	34	8	14	1	3.72	31	37	14	30	3	3.55	0.99
7	Are designed to accommodate differences in learning styles	24	27	7	12	5	3.71	16	54	26	13	6	3.53	1.05
8	Are stated in measurable terms	24	32	7	12	-	3.91	26	57	7	18	7	3.67	1.43
9	Contain action for performance	22	35	12	6	-	3.97	33	57	14	6	5	3.93	0.30
10	Contain conditions for performance	14	42	4	10	5	3.67	42	48	14	9	2	4.03	-2.38**
11	Contain criteria for performance	17	27	16	7	8	3.51	29	50	10	26	-	3.71	-1.21
12	Are sequenced appropriately	39	18	1	16	1	4.04	19	43	32	18	3	3.49	3.29**
13	Media are used in ways that facilitate objectives	14	38	7	11	5	3.60	30	57	10	15	3	3.83	-1.46
14	Evaluation is directed towards measuring objectives	26	26	7	16	-	3.83	32	52	5	23	3	3.76	0.42

[4.50-5.00=Strongly Agree, 3.50-4.49=Agree, 2.50-3.49=Uncertain, 1.50-2.49=Disagree, 1.00-1.49=Strongly Disagree]

\*1=Calculated Means across Cells

\*\*=Statistical Difference among Mean Values at  $\alpha = 0.05$  and  $df = 188$

Item 1 of Table 4.9 was asked to check whether learning objectives were defined as part of the instructional design or not. Both the academic staff and students confirmed the fact that the objectives in the colleges/universities were defined in such a way with mean values of 4.12 and 4.06 respectively. In technology assisted instruction, learning objectives must be explicitly communicated to objectives. In this regard, the colleges/universities have well addressed the issue as it was depicted by mean values 4.28 and 4.21 of the staff and students respectively. This helps students in having an easy time as to how to proceed in the progress of the teaching learning at a distance.

Items 3 to 5 are about technology assisted activities being linked with skills, knowledge and experience to meet the objectives. As can be seen from the mean values of Item 3 of Table 4.9, instructions included skills to meet the objectives as confirmed by mean values 3.79 and 4.15.

There was a statistically significant difference between the mean values of the two respondents, students more favoring the existence. The other elements, knowledge and experience, were also included in the instruction to meet the objectives set. The t value (-2.58) for instructional inclusion of knowledge to meet the objectives showed that there was a significant difference asserting the fact that students had better agreement than the staff.

In technology assisted instruction, objectives must be related to real life experience through examples. Objectives should not be detached from the day to day experience of learners. Computed mean values depicted that this has been the case in the colleges/universities for they were found to be 3.72 and 3.55. Learning styles might differ from learner to learner. It is encouraged in technology-assisted instruction that objectives accommodate this difference. As can be seen from the mean values of Item 7 of Table 4.9, both respondents confirmed the practice with mean values 3.77 and 3.53. Only because an instruction is assisted with technology, it does not mean that the objectives ignore one of the basic requirements, measurability. The mean values in Item 8 of Table 4.9 depicted that the objectives set were stated in measurable terms.

Three other important elements of objectives in technology assisted instruction are its ability to contain actions, conditions and criteria for performance. These elements help learners in explicitly understand what to do in what conditions and the criteria for doing so. The responses as far as actions for performance are concerned indicated that they were being applied with mean values 3.97 and 3.93. Conditions for performance also were elements considered by the colleges/universities. There, however, was a significant difference between the mean values of the two groups of respondents, i.e. academic staff and students. Objectives also included the criteria for performance.

The need for proper/appropriate sequencing of objectives in technology assisted instruction is as mandatory as the rest of variables being discussed. While the academic staff agreed that the appropriate sequencing was done with a mean value of 4.04, students doubt about it and rated for uncertainty. The t value also showed this difference with a value 3.29 which was greater than the critical value 1.96. In cases where application of other media is required, it

should be in line with the predetermined objectives. Responses indicated that the colleges used media in ways that facilitate learning objectives with mean values 3.60 and 3.83. Evaluations were also made towards measuring the objectives set as it should be the case in any technology assisted instruction.

The above discussion on integrating technology with learning objectives implies that to quite a number of variables the colleges/universities have managed to integrate existing technologies with the objectives set to be met. The result of the interview also proved this as the deans said that their colleges/universities try to integrate existing technologies with the learning objectives.

#### 4.4.2 Technology and Learning Contents

Another element of instructional design that any chosen form of technology needs to be integrated with is contents. When a technology is thought of, it is worth considering factors which link the technology with the contents to be designed. Table 4.10 is therefore a summary of responses to questions asked to investigate this.

**Table 4.10** Frequencies and Mean Distribution of Some Aspects of Integration of Technology with Learning Contents

No.	Item Description	Respondents											t	
		Academic Staff (N=75)						Students (N=115)						
		SA (5)	A (4)	U (3)	D (2)	SD (1)	X*1	SA (5)	A (4)	U (3)	D (2)	SD (1)		X*1
1	Identify skills that need to be mastered.	17	36	7	10	5	3.67	38	56	11	10	-	4.06	- 2.64**
2	Include the changes in attitude required	19	30	11	7	8	3.60	31	54	19	11	-	3.91	- 2.00**
3	Content analysis has been made to cover areas needed.	27	31	8	7	2	3.99	43	28	30	12	2	3.85	-0.84
4	Are hierarchically sequenced	31	25	12	7	-	4.07	54	36	13	12	-	4.15	-0.55
5	Are functionally sequenced	27	32	10	-	6	3.99	30	51	22	6	6	3.81	1.11
6	Are sequenced general to specific	32	19	7	12	5	3.81	35	51	10	12	7	3.83	-0.07
7	Are sequenced specific to general	23	20	24	8	-	3.77	36	56	-	8	15	3.78	-0.05
8	Are chronologically sequenced	40	16	7	7	5	4.05	11	54	28	15	7	3.41	3.83**
9	Contain cognitive domain	39	19	2	13	2	4.07	62	42	3	8	-	4.37	- 2.05**
10	Contain psychomotor domain	20	30	5	10	10	3.53	26	46	24	9	10	3.60	-0.36
11	Contain affective domain	30	19	13	8	5	3.81	22	51	19	13	10	3.54	1.52
12	Designed such that varied deliveries could be used	29	13	26	4	3	3.81	8	47	12	29	19	2.97	4.69**
13	Designed such that frequent feedbacks are given	17	25	19	13	1	3.59	29	36	25	25	-	3.60	-0.08

[4.50-5.00=Strongly Agree, 3.50-4.49=Agree, 2.50-3.49=Uncertain, 1.50-2.49=Disagree, 1.00-1.49=Strongly Disagree]

\*1=Calculated Means across Cells

\*\*=Statistical Difference among Mean Values at  $\alpha = 0.05$  and  $df = 188$ ,

In forms of learning assisted by technology, it is required that contents identify the skills that need to be mastered as a result of learning. Responses from the two groups in this regard showed that skills were identified with mean values 3.67 and 4.06 which ended up with statistically different mean values as depicted by a t value of -2.64. This shows that students have found more skills incorporated/identified in the contents. All kinds of changes in attitude from the side of the learners have also been included in the contents for mean values confirmed this with 3.60 and 3.91. This also came out to be a difference in the statistical significance comparison of the two means found from the two groups. Areas that need to be addressed in the content of the technology assisted instruction were also done as analysis for mean values depicted this with 3.99 and 3.85.

Items 4 through 8 of Table 4.10 were presented to investigate the appropriateness of sequencing contents in technology assisted instruction. Among the five important sequencing techniques (hierarchical, functional, general to specific, specific to general and chronological), as and when appropriate to be used, both respondents confirmed the existence of such sequencing in four, hierarchical, functional, general to specific and specific to general, with mean values ranging from 3.77 to 4.15. Students, however, were uncertain on the chronological sequencing of contents as opposed to the agreement by the academic staff whose mean value was 4.05. This resulted in statistically significant mean value differences. It can be said that contents in the colleges/universities are well sequenced in such a way that technologies are applied with them without any problem.

Contents in technology assisted instruction are also required to integrate the three major and important domains of learning: cognitive, psychomotor and affective domains. Cognitive being the domain rated the highest among the three with pairs of mean values (4.07, 4.37), respondents asserted the inclusion of all the three in the contents designed. This shows that technologies chosen to be used could effectively assist the teaching learning via addressing all the three domains.

Inclusion of the three domains does not suffice by itself. Like learning objectives, contents also must be designed in such a way that varied ranges of technologies/delivery options could be

used with them. Students did not agree with the ratings of the academic staff which rested in a range of agreement. They decided to refrain from that and rate for uncertain. This actually was also a statistically significant difference. Contents must suit for continuous feed back. Though computed values were very close to the range 'Uncertain', responses indicated that the contents were designed in such a way that frequent feedbacks could be given as confirmed by mean values 3.59 and 3.60.

In summary, except for a few variables discussed above, contents are well integrated and well suited for the application of any form of technology chosen as per the selecting factors discussed in the previous section of this chapter. Interview result also depicted this as it was responded by deans that the colleges/universities made sure that technology, when used, is integrated with the learning contents.

#### **4.4.3 Technology and Learning Delivery**

Delivery is among the very important components of instructional design. It, together with the others, contributes its part for the effectiveness of an instructional design system. The following table is therefore designed to summarize the different aspects of delivery items that need to be considered in technology assisted instruction.

**Table 4.11 Frequencies and Mean Distribution of Some Aspects of Integration of Technology with Learning Delivery**

No.	Item Description	Respondents												t
		Academic Staff (N=75)						Students (N=115)						
		SA (5)	A (4)	U (3)	D (2)	SD (1)	X*1	SA (5)	A (4)	U (3)	D (2)	SD (1)	X*1	
1	In-depth analysis has been made to explore options	14	26	20	6	9	3.40	31	61	20	3	-	4.04	- 4.50**
2	Selection of media is based upon their ability to support objectives.	10	32	17	12	4	3.43	23	87	-	5	-	4.11	- 5.61**
3	Selection is influenced by its accessibility	7	24	28	9	7	3.20	29	57	7	19	3	3.78	-3.63
4	Course incorporates a variety of instructional media	8	25	6	17	19	2.81	43	46	7	19	-	3.98	- 6.53**
5	Course activities are matched with media	10	39	3	14	9	3.36	23	58	4	16	14	3.52	-0.85
6	Course assessments are matched with media	10	19	24	11	11	3.08	28	64	9	14	-	3.92	- 5.42**
7	Users are adequately prepared to use the media	11	18	19	15	12	3.01	40	42	13	20	-	3.89	- 5.04**
8	Users are adequately supported to use the media	5	16	15	30	9	2.71	17	52	28	18	-	3.60	- 5.88**
9	Design reflects the diversity of potential learners	13	21	17	15	9	3.19	25	34	14	37	5	3.32	-0.72
10	Contingency strategies are designed as a recovery for technology-related interruptions	5	23	15	21	11	2.87	35	36	22	22	-	3.73	- 5.12**
11	Advantages of the media are realized before usage	4	18	23	26	4	2.89	28	64	16	3	4	3.95	- 7.54**
12	Disadvantages of the media are realized before usage	7	25	15	18	10	3.01	9	55	14	37	-	3.31	-1.84
13	Technology used does not dominate but facilitates instruction	10	16	35	7	7	3.20	38	44	7	12	14	3.49	- 2.66**
14	Age is taken into account	13	23	16	15	8	3.24	52	39	12	12	-	4.14	- 5.51**
15	Sex is taken in to account	13	12	23	11	16	2.93	40	60	6	6	3	4.11	- 7.12**
16	Ethnicity is taken into account	20	12	12	17	4	3.36	40	45	17	6	7	3.91	- 3.17**
17	Size of learners is taken into account	10	24	16	21	4	3.20	39	44	20	10	2	3.93	- 4.66**
18	Geographical location is taken into account	22	24	12	12	5	3.61	30	40	29	10	6	3.68	-0.37
19	Strength/limitation is taken into account	14	30	18	5	8	3.50	24	56	13	22	-	3.71	-1.37
20	Learning style preferences are taken into account	20	19	12	17	7	3.37	10	61	13	22	9	3.36	0.09

[4.50-5.00=Strongly Agree, 3.50-4.49=Agree, 2.50-3.49=Uncertain, 1.50-2.49=Disagree, 1.00-1.49=Strongly Disagree]

\*1=Calculated Means across Cells      \*\*=Statistical Difference among Mean Values at  $\alpha = 0.05$  and  $df = 188$

Different options that could be helpful to deliver a certain kind of content should be analyzed in depth. In this regard, the academic staff was uncertain about it while students agreed on the

existence of depth analysis. When delivery materials are selected they should be based on their ability to support predetermined objectives. Here again the mean calculated from the responses of the academic staff showed uncertainty while students agreed with mean values 3.43 and 4.11 respectively. The pattern as indicated in the above two responses continues for variables; accessibility, incorporation of a variety of instructional media, matching course activities with media, course assessments matching media, preparedness of users for the media and adequate support for users in relation to the media with mean values ranging from 2.71 to 3.36 for the academic staff and from 3.52 to 3.98 for students the former being in the range of uncertainty and the later in agreement for the application of the different variables in the college/universities. Both groups of respondents were uncertain in responding to the question related to the ability of the delivery design to reflect the diversity of potential learners. Mean values computed from the items confirmed this with 3.19 and 3.32.

A delivery model may fail for various expected or unexpected reasons. A contingency plan to substitute it when it does so would be vital. As can be seen from Item 10 of Table 4.11, this plan was felt to exist by students even if the academic staff was uncertain. Its absence might delay the teaching learning process. Available media should not directly be used only because it is there. Its advantages and disadvantages must ahead of time be tested. Responses from the academic staff and students failed to reveal their agreement or disagreement for the mean values computed were 2.89 and 3.01 respectively. Rating from the responses of the two groups confirmed that they were not sure as far as technology/media used did not dominate but facilitated instruction as indicated by mean values 3.20 and 3.49.

Items 14 to 20 discuss on the impacts of learner characteristics in the delivery of instruction. Learner demographics like sex, age and ethnicity are among the elements an institution has to take into account before using the delivery model. All the three elements in the demography were rated uncertain by the academic staff in spite of students' feeling of their existence. The differences between the mean values in their responses were also found to be significant. Size of learners is another characteristic of learners which affects the delivery model. Mean value from the academic staff was 3.20 and that of students was 3.93. Both groups of respondents confirmed the consideration of geographical locations of learners to apply a delivery mode

with mean values 3.61 and 3.68. Strength/limitations of learners were among the factors considered by the colleges in setting a delivery model for the mean values from the academic staff and students depicted this with 3.50 and 3.71 respectively. As far as the last item of Table 4.11 is concerned, both the academic staff and students were uncertain in giving responses on whether the learning style preferences of learners as a characteristic was considered or not with the mean values 3.37 and 3.36 respectively.

One can easily deduce from the above discussion that the majority of the variables to be considered in learning delivery in technology assisted instruction have not been met. They rather were rated as uncertain by particularly the academic staff which happens to be the ones who take the lion's share in applying it. Deans indicated in the interview that much has not been done in seriously considering delivery issues in the colleges/universities.

#### **4.4.4 Technology and Learning Interactivity**

Interactivity is another element of instructional design. The more a technology is integrated with this element the better the interactivity will be both in terms of speed and consistency. Table 4.12 below contains questions asked and responses of the two group of respondents related to the issue.

**Table 4.12 Frequencies and Mean Distribution of Some Aspects of Integration of Technology with Learning Interactivity**

No.	Item Description	Respondents												t
		Academic Staff (N=75)						Students (N=115)						
		SA (5)	A (4)	U (3)	D (2)	SD (1)	X*1	SA (5)	A (4)	U (3)	D (2)	SD (1)	X*1	
1	Activities require high learner-learner interaction.	13	24	10	14	14	3.11	40	44	13	18	-	3.92	- 4.58**
2	Activities require high learner-college interaction.	16	20	18	13	8	3.31	51	44	9	8	3	4.15	- 5.03**
3	Activities require high learner-content interaction.	20	25	19	2	9	3.60	42	43	19	11	-	4.01	- 2.54**
4	Activities require high learner-tutor interaction.	6	31	18	15	5	3.24	29	42	23	18	3	3.66	- 2.60**
5	Balance between formal and informal interaction is maintained.	20	20	18	10	7	3.53	26	54	19	16	-	3.78	-1.63
6	Learners are provided with list of technologies required.	7	28	14	10	16	3.00	41	18	13	40	3	3.49	- 2.24**
7	Learners are provided with explanation of technologies required.	10	22	14	16	13	3.00	35	21	33	26	-	3.56	- 3.12**
8	Learners are provided with the opportunity to practice.	10	33	10	10	12	3.25	25	54	16	14	6	3.67	- 2.41**
9	Instructions support positive interdependence (group projects).	15	19	11	21	9	3.13	6	76	16	15	2	3.60	- 2.93**
10	Instructions support individual accountability.	24	25	15	3	8	3.72	38	35	17	16	9	3.67	0.27
11	Instructions support appropriate interpersonal skills.	17	25	15	9	9	3.43	26	55	13	14	7	3.69	-1.46
12	Instructions support group self-evaluations.	5	28	14	15	13	2.96	14	53	34	9	5	3.54	- 3.61**
13	Regular contact schedule is established.	9	32	13	13	8	3.28	10	60	23	10	12	3.40	-0.71
14	Contact schedules are maintained.	12	19	8	17	19	2.84	20	29	29	10	27	3.04	-1.52

[4.50-5.00=Strongly Agree, 3.50-4.49=Agree, 2.50-3.49=Uncertain, 1.50-2.49=Disagree, 1.00-1.49=Strongly Disagree]

\*1=Calculated Means across Cells \*\*=Statistical Difference among Mean Values at  $\alpha = 0.05$  and  $df = 188$

Items from 1 to 4 indicated in Table 4.12 present issues related to the level of interaction as expressed by different stakeholders. High learner-learner interaction was believed to exist as responded by the learners themselves with mean values 3.92 unlike the academic staff who rated for uncertainty. Regarding student-college interactions, students confirmed that it was high with a mean value of 4.15 as opposed to the hesitancy to do so by the academic staff. Both groups agreed that the learner-content interaction was high as depicted by mean values 3.60 and 4.01. Learner-tutor interaction was another element of interaction rated uncertain by the academic staff with a mean value of 3.24. In all of the four variables discussed, there was a statistically significant difference between the mean values. The t-test values ranged from -5.03 to -2.54 depicting the better ratings of students to the variables discussed.

Both formal and informal interactions existed in an institution between the pairs discussed above. Both should be encouraged and a balance between the formal and informal interactions must be maintained. Respondents showed their agreement in this regard with mean values 3.53 and 3.78. Lists of technologies to be used are best believed to be provided to help students with preparation. Responses indicated uncertainty both from the academic staff and students. Providing the list only may not be enough. Learners must be given explanations of the technology to be used and the opportunity to practice. According to the responses of the academic staff, these were not elements that their colleges/universities gave emphasis to for the mean values confirmed these with 3.00 and 3.25 respectively. Students have recognized some level of application of the two as shown in their mean ratings 3.56 and 3.67 respectively. We can not for sure say that learners are supported with clear explanation and opportunity to practice a technology to be used in the teaching learning process.

Instructions could support collaborative/cooperative learning by encouraging positive interdependence (group projects), individual accountability, appropriate interpersonal skills and group self evaluations. Items from 9 to 12 were asked to assess their practice in the college/university. While both groups of respondents agreed on the encouragements from the colleges/universities in individual accountability with mean values 3.72 and 3.67, only students confirmed this encouragement in the other variables with mean values ranging from 3.54 to 3.69. The academic staff, however, chose to rate for uncertain with mean values ranging from 2.96 to 3.13. This implies that more emphasis and encouragement as agreed by the two groups was given to individual accountability than the others which happen to be equally important.

Establishing regular contact schedule and maintain the schedule are important elements of interactivity. The responses from the respondents asserted the fact that they didn't have confidence to rate for either agreement or disagreement. It was instead revealed as uncertainty with paired mean values (3.28, 3.40) and (2.84, 3.04) for the elements establishing and maintaining regular contacts respectively.

Interactivity, being a vital element of the design, would greatly be valuable if assisted by technology. According to Wagner (1997), the use of interactive technologies in a distance

learning institution contributes to perceptions of distance learning quality. Many of the variables discussed above are not well addressed with the existing technologies of the colleges/universities.

#### 4.4.5 Technology and Learning Assessment

The last element of the instructional design, assessment, is also another important part that a technology must be well integrated to. This process could best meet its intended objective if it is appropriately used with whatever kind of technology is currently applied. The following table is therefore a summary of some of the important elements of technology assisted assessment and responses found from respondents from the four colleges/universities.

**Table 4.13 Frequencies and Mean Distribution of Some Aspects of Integration of Technology with Learning Assessment**

No.	Item Description	Respondents											t	
		Academic Staff (N=75)						Students (N=115)						
		SA (5)	A (4)	U (3)	D (2)	SD (1)	X	SA (5)	A (4)	U (3)	D (2)	SD (1)		X
1	Are congruent with learning objectives.	10	29	12	24	-	3.33	31	16	10	26	32	2.93	1.34
2	Are congruent with learning skills.	4	24	20	17	10	2.93	29	24	20	40	2	3.33	1.34
3	Varied ranges of methods are provided for learners to assess their progress.	9	20	22	12	12	3.03	17	53	24	18	3	3.55	3.16**
4	Guided support is provided for learners to assess their progress.	12	19	16	19	9	3.08	14	49	28	21	3	3.43	2.13**
5	Strategies that utilize resources local to learners are utilized.	7	22	18	19	9	2.99	30	22	10	30	23	3.05	1.20
6	Makes use of varieties of technologies.	9	22	15	17	12	2.99	24	25	29	14	23	3.11	1.23
7	There are proper safeguards to protect instruments.	8	17	19	23	8	2.92	15	45	35	11	9	3.40	2.88**
8	Are regularly checked for validity.	17	18	25	9	6	3.41	20	42	17	26	10	3.31	0.99
9	Are regularly checked for reliability.	15	18	21	9	12	3.20	13	48	31	21	2	3.43	1.35
10	Are given to improve learners' ongoing learning	10	22	23	16	4	3.24	19	34	24	28	10	3.21	0.18
11	Are given to report what is achieved.	37	20	6	4	8	3.99	36	34	28	6	1	3.59	1.09

[4.50-5.00=Strongly Agree, 3.50-4.49=Agree, 2.50-3.49=Uncertain, 1.50-2.49=Disagree, 1.00-1.49=Strongly Disagree]

\*1=Calculated Means across Cells \*\*=Statistical Difference among Mean Values at  $\alpha = 0.05$  and  $df = 188$

Assessments must be congruent with learning objectives. As could be seen from Item 1 of Table 4.13, both groups of respondents indicated that this was not found to be a practice in their college/university for the mean values depicted this with 3.33 and 2.93. The same pattern of response was revealed in the question asked to check whether the assessments being applied were congruent to the learning skills or not. Students agreed with the fact that varied

ranges of methods are provided for them in assessment with a mean value of 3.55 as opposed to the academic staff who didn't believe so.

Guided support should be provided for learners to assess their progress. Respondents did not agree to this fact for they refrained and gave responses showing their uncertainty. Utilizing resources local to learners in a technology assisted assessment is crucial. This was not the case in the colleges as depicted by mean values 2.99 and 3.05. This might lessen the effectiveness of the assessment strategy which in turn gives unreliable scores of evaluation from students.

Application of varied ranges of technology to support assessments would help in having a faster and more efficient system in the colleges. Here again, respondents were not sure as to whether it existed or not for the mean values confirmed this with 2.99 and 3.11. Proper safeguards of the assessment materials could help in letting students get results of their own. Application of these in the colleges/universities was not asserted. As can be seen from Item 7 of Table 4.13, respondents were uncertain about it. Though both groups of respondents were found to be in the same category, there was a statistically significant difference between the mean values.

Assessment instruments in technology assisted instruction design must be checked for their validity and reliability both of which were not seriously taken by the colleges/universities for the mean values for the question on validity were 3.41 and 3.31 and for that of reliability computed mean values were found to be 3.20 and 3.43. This implies that there is a good possibility in the colleges/universities of providing assessment instruments which measure aspects that are not intended to be done and another possibility of getting different scores for the same instruments delivered in two or more different occasions.

When technology assists the assessment in DL, it helps in the integration of the two basic forms of assessment, i.e. formative and summative assessments. Item 10 of Table 4.13 revealed that assessments were not given to improve learners' ongoing learning (formative). The mean values 3.24 and 3.21 depicted this. As far as giving the assessment for reporting what is achieved (summative) is concerned, both respondents asserted its application in the

college/university with mean values 3.99 and 3.59. It can be said that assessment in the institutions are more of summative than the integration of the two.

The above discussions imply that one can hardly say that all important elements of technology assisted assessments are being implemented to the root in the colleges/universities for there existed many uncertainties in the responses. Results from the interview, however, depicted that the colleges/universities made careful implementation of procedures in assessment.

## **4.5 Technology and Learner Support System**

Learner support system is another important section of DL system. When it is assisted by technology, it best serves students for whom it is designed. Discussions that follow in this section try to investigate the existence of the different forms of learner support system and the level to which technology assists the support system.

### **4.5.1 Individualized Learner Support System**

Learner support systems could be adjusted to serve individual students instead of groups. Doing so helps the student get a more particular support suited to his interest. It also helps the tutor address the individual needs of his/her learners.

Response found as to whether an individualized learner support system existed in the colleges/universities or not depicted that it was applicable. This was confirmed by 54.7% of the academic staff and 71.3% of students who said that there existed an individualized learner support system in the colleges/universities. The chi-square result calculated to check statistical significance proved to be insignificant between yes and no for the academic staff and significant for students. The interview result in relation to this confirmed that there was a practice of individualized learner support system. This implies that there exists an individual learner support system in the institutions. According to Kenworthy (2003), this helps students in providing them with necessary assistance on matters where they have failed to understand or be helped with in group based support systems.

Questions were asked to investigate which technologies were dominantly used to facilitate this individualized learner support system. Responses found from respondents are summarized in the following table with frequencies, percentages and chi-square values.

**Table 4.14 Frequencies and Percentage Distribution of Some Aspects of Learner Support System (Technology in Individualized Learner Support)**

Item Description (Technology used in individualized form of support)	Respondents						
	Academic Staff (N=41)			Students (N=82)			
		App.	Not App.	X <sup>2</sup>	App.	Not App.	X <sup>2</sup>
Telephone	f	37	4	26.50*	70	12	41.02*
	%	90.2	9.8		85.4	14.6	
Mail	f	13	28	5.49	34	48	2.39
	%	31.7	68.3		41.5	58.5	
Email	f	7	34	17.78*	-	82	-
	%	17.1	82.9		0	100	
Faxes	f	7	34	17.78*	10	72	46.88*
	%	17.1	82.9		12.2	87.8	
Face to face	f	37	4	30.45*	66	16	30.49*
	%	90.2	9.8		80.5	19.5	

App. = Applicable \*Statistically Significant Chi-square Value at  $\alpha = 0.05$

Five different options were given for respondents who chose for “Applicable” in the preceding question to indicate which technology is being applied and which not to support the individual based learner support system. Responses depicted that telephone and face to face meetings were the two most dominant technologies used to support the individualized learner support system which was confirmed by 90.2% for both of the academic staff and 85.4% and 80.5% of students. The chi-square values have shown significant differences and it could be deduced that these two technologies are largely used in the colleges/universities. Technologies like email and faxes were not used to assist the individualized learner support system for 82.9% of the academic staff rated “Not Applicable” for both and 100% and 87.8% of the students believed that this was not applicable. The chi-square results shown for mail depicted the fact that there was no statistical significant difference between the response groups and therefore its application could not for sure be said. This implies that the application of technology in individual learner support system is only limited to telephone and face to face modes. Backing it with the rest would be very important for a faster individual learner support system Mason (2003).

#### 4.5.2 Group-based Learner Support System

Another option of providing learner support systems is through group. This alternative needs a careful look into for it is primarily designed to give support to many regardless of their learning

style preferences and particular problems. The following discussions present some aspects of group based learning support system.

**Table 4.15 Frequencies and Percentage Distribution of Some Aspects of Learner Support System (Type of Group-based Learner Support System)**

Item Description (Form of Group –based support)	Respondents						
	Academic Staff (N=75)				Students (N=115)		
		App.	Not App.	X <sup>2</sup>	App.	Not App.	X <sup>2</sup>
Tutorials	f	72	3	63.48*	109	6	92.25*
	%	96	4		94.8	5.2	
Audio conferencing	f	3	72	63.48*	4	111	99.56*
	%	4	96		3.5	96.5	
Peer group support	f	9	66	87.36*	24	91	39.04*
	%	12	88		20.9	79.1	

App. = Applicable

\*Statistically Significant Chi-square Value at  $\alpha = 0.05$

Tutorials were, as indicated by the responses from students and the academic staff, the major forms of techniques being applied in the colleges/universities as depicted with 96% and 94.8% respectively. Audio conferencing being a technological option of providing group-based learner support system was not used in the colleges/universities as 96% and 96.5% of academic staff and students respectively chose for “Not Applicable”. This could have helped in avoiding the necessary appearance of tutors in different centers for the tutor/instructor could provide the teaching from a specific center. It also minimizes the instructional cost of the institutions. The third means of providing group-based learner support system is peer group support. This practice helps learners learn from one another. Eighty-eight percent (88%) of the academic staff and 79.1% of students asserted that this method of providing group-based support was not a practice in their colleges/universities. They were backed by the statistically significant chi-square values. It can be deduced from this that the only form of group based support system is tutorial. For Bertram (2003), assisting the tutorial form with the others is very important in having a well organized group-based support system.

The existing group-based system must meet some purposes so that they can best benefit learners. Discussed below are some purposes for which a group-based support system could be used.

**Table 4.16 Frequencies and Percentage Distribution of Some Aspects of Learner Support System (Purpose of Group-based Learner Support System)**

Item Description (Purpose of group-based support)	Respondents								
	Academic Staff (N=75)					Students (N=115)			
		Maj	Min	None	X <sup>2</sup>	Maj	Min	None	X <sup>2</sup>
Broad term content introduction	f	60	12	3	75.12*	68	44	3	56.37*
	%	80	16	4		59.1	38.3	2.6	
Responding to experienced problems	f	47	28	-	4.81	52	57	6	41.23*
	%	62.7	37.3	-		45.2	49.6	5.2	
Helping illumination of issues through discussion	f	40	31	4	28.08*	39	70	6	53.44*
	%	53.3	41.3	5.3		33.9	60.9	5.2	
Facilitating project work	f	29	36	10	14.48*	31	75	9	58.92*
	%	38.7	48.0	13.3		27.0	65.2	7.8	

Maj = Major    Min = Minor    \*Statistically Significant Chi-square Value at  $\alpha = 0.05$

Major emphasis was indicated to be given for broad term content introduction in the group based learner support for 60% of the academic staff and 68% of students confirmed its practice in the institutions. The academic staff also depicted the fact that responding to experienced problems was one of the purposes for 62.7% of them rated for major. This, however, was not a major area where the universities/colleges considered as a purpose as confirmed by students for 42.1% rated for major and 49.6% rated for minor. Helping students with illumination of issues through discussion was not an area of emphasis for the academic staff for the ratings between major and minor were very close, i.e. 53.3% and 41.3% respectively. Students in their part indicated the lack of experience of the colleges in this regard as 60.9% of them rated for minor. A well organized group based learner support system facilitates project work. This promotes the creation of systems that let students have a chance to share their experience. Responses indicated in Table 17 depicted that 38.7%, 48.0% and 20% of the academic staff rated for major, minor and none respectively. As opposed to this, 65.2% of students indicated that there was a minor emphasis given to facilitate project works. This implies that the major emphasis as agreed by both the academic staff and students is broad term introduction of contents. Other elements discussed are not to be said that they are purposes being addressed in group based learner system.

#### 4.5.3 Counseling Learner Support System

Counseling is one of the key components of learner support system. The following discussions give the responses given by respondents asked to indicate its applicability in their colleges/universities.

According to the responses from both groups of respondents, the universities have stretched a counseling service program as confirmed by percentages 90.7% and 91.3% of the academic staff and students respectively. This is very important to learners in particular occasions whereby the advice from a tutor and/or a college counseling expert is found to be indispensable (Lentell, 2003).

The counseling program would be effective if it is supported by different forms of technologies. The following table summarizes different alternatives of technologies that could be used in counseling learners at a distance.

**Table 4.17 Frequencies and Percentage Distribution of Some Aspects of Learner Support System (Technologies Used in Counseling)**

Item Description (Technology used in counseling support system)	Respondents						
	Academic Staff (N=68)				Students (N=105)		
		App.	Not App.	$\chi^2$	App.	Not App.	$\chi^2$
Telephone	f	56	12	28.47*	57	48	0.77
	%	82.35	17.65		54.43	45.57	
Mail	f	28	40	2.12	54	51	0.09
	%	41.18	58.82		51.43	48.57	
Email	f	4	64	52.94*	6	99	82.37*
	%	5.88	94.12		5.71	94.29	
Faxes	f	3	65	56.53*	-	105	-
	%	4.41	95.59		-	100	
Face to face	f	63	5	49.47*	95	10	68.81*
	%	92.65	7.35		90.48	9.52	

\*Statistically Significant Chi-square Value at  $\alpha = 0.05$

As can be seen from Table 4.19, 82.35% of the academic staff confirmed the usage of telephones in their colleges/universities. The chi-square value depicted the fact that there was a significant difference between the two sets of responses. Students, however, rated for both in such a way that there was no statistical difference between the sets of their responses i.e. 54.43% of confirming its application and 45.57% said that it was not practical. Therefore it was found to be difficult to tell whether students have agreement or disagreement as far as the application of telephones was concerned. Mail as another alternative of providing counseling with, had close ratings between the two alternatives by the academic staff for 41.18% said 'yes' and 58.82% said 'no' leaving a statistically insignificant chi-square value of 2.12. It was also found very difficult to tell whether mail was supposedly applied for counseling service from the responses of students for 51.43% of them said it was applied and 48.57% of them said 'Not Applicable'. The chi-square value calculated was found to be 0.09 which was

insignificant difference between the two. Therefore from both the responses of the academic staff and students, one can not deduce whether or not mails were used for counseling service. Mails and faxes as responded by both groups of respondents were not confirmed to be used in the colleges/universities to provide counseling with. Learners get counseling service through face to face contact in the centers for 92.65% of the academic staff and 90.48% of students confirmed the existence of this with statistically different chi-square values between the sets of responses of each group of respondents. It can be deduced from the above discussion that telephones and face-to-face meetings are the major forms of methods of providing counseling for learners in the colleges/universities.

The existence of a counseling service and its being backed by different technologies is not an end by itself. The technologies used must somehow support the counseling service to meet three different critical evaluations of counseling. The table below addresses these evaluation factors in line with the responses found from respondents.

**Table 4.18 Frequencies and Mean Distribution of Some Aspects of Learner Support System (Evaluation of Counseling)**

No.	Item Description (Evaluation of the counseling service)	Respondents													t
		Academic Staff (68)						Students (115)							
		EX (5)	VG (4)	G (3)	P (2)	VP (1)	X*1	EX (5)	VG (4)	G (3)	P (2)	VP (1)	X*1		
1	Openness	14	15	17	22	-	3.09	40	19	33	23	-	3.66	-2.01**	
2	Friendliness	18	23	19	8	-	3.75	31	25	44	15	-	3.75	0.80	
3	Approachability	16	20	17	15	-	3.54	20	19	44	32	-	3.23	1.91	

[4.50-5.00=Excellent (EX), 3.50-4.49=Very Good (VG), 2.50-3.49=Good (G), 1.50-2.49=Poor (P), 1.00-1.49=Very Poor (VP)]

\*1=Calculated Means across Cells \*\*=Statistical Difference among Mean Values at  $\alpha = 0.05$  and  $df = 181$

Openness is one important element against which a counseling service could be evaluated. Responses indicated that the evaluation of this element was good as indicated by a mean value of 3.09 computed from the responses of the academic staff and very good as confirmed by students with mean value 3.66. There was a statistically significant different value of -2.01 between the mean values of the two. The other core element against which counseling could be evaluated is friendliness. As depicted by both the academic staff and students the counseling service was friendly for it was rated to be very good with mean values of 3.75 for each. As far as approachability is concerned, it was shown from the responses of the academic staff that it was very good. Students, however, rated for good with a mean value of 3.23. The

above discussion implies that the counseling services in the colleges is more of a very good one so that students feel free in getting whatever kind of support they would like to get from their universities/colleges.

There needs to be a clear purpose to which a counseling service is given for learners. Having it assisted by technology and meeting the evaluation criteria discussed above won't be enough by themselves. There might be a good possibility of using the counseling for a wrong purpose not related to the individual needs of learners. The following table discusses some elements related with the purpose of the counseling service rendered in the colleges/universities.

**Table 4.19 Frequencies and Percentage Distribution of Some Aspects of Learner Support System (Evaluation of Counseling)**

Item Description (Purpose of the counseling support)	Respondents								
	Academic Staff (N=68)					Students (N=115)			
		Maj	Min	None	X <sup>2</sup>	Maj	Min	None	X <sup>2</sup>
Advising on course related requirements	f	36	32	-	0.24	59	53	3	49.32*
	%	53.0	47.0	-		51.3	46.1	2.6	
Helping in program selection	f	38	30	-	0.94	54	58	3	49.06*
	%	55.9	44.1	-		47.0	50.4	2.6	
Advising on problems affecting studies	f	42	22	4	26.24*	61	48	6	43.11*
	%	61.8	32.4	5.8		53.0	41.7	5.2	
Advising on financial issues	f	26	38	4	41.00*	50	59	6	41.00*
	%	38.2	55.9	5.9		43.5	51.3	5.2	

Maj = Major

Min = Minor

\*Statistically Significant Chi-square Value at  $\alpha = 0.05$

As can be seen from Table 4.21, responses from both the academic staff and students showed the close ratings between the major and minor emphasis given in the counseling service to serve the purpose of advising on course related requirements. The percentage values 53% and 47% from the responses of the academic staff and 51.3% and 46.1% from students for major and minor respectively in each pair support the point noted above. It can, therefore, be said that we can't tell whether a major or minor emphasis was given to this element. 'None' was not an option in the colleges/universities implying that there was some level of emphasis given to this purpose. Students might need counseling service in order to be helped in program selection. The responses from both groups could not once again distinguish and detect a major difference between the major and minor level of emphasis given. The chi-square value for the academic staff was 0.94 with no staff member rating for the option none. Forty-seven percent (47%) and 50.4% of students rated for major and minor respectively for the purpose related to program selection. Even if it can't be said that there was no emphasis given to this purpose at

all, it was also true that it can't be said whether a major or minor emphasis was given. A major emphasis was given to assist learners with counseling related to problems affecting their studies for 61.8% of the academic staff confirmed this. For students, there still existed that level of closeness between major and minor emphasis with values 53% and 41.7% respectively. Here it could be said that counseling in the colleges/universities was used for the purpose related to helping students with solving problems encountered. For the academic staff, advising students with financial issues was not an area of purpose where major emphasis as an element of counseling was given. A total of 38 (55.9%) of 68 respondents confirmed the above fact. Responses from students, however, did not indicate whether major or minor emphasis was given to this element. Therefore, it could be deduced from the above discussion that problem solving was an area where major emphasis was given and financial related issues were the ones given minor emphasis as areas of counseling.

#### **4.5.4 Center-based Learner Support System**

Since distance learners usually are away from the distance learning college/university, the need for center based support system is very high. The subsequent discussions therefore are some aspects of center-based learner support systems worth noting in technology assisted DL program.

Responses from both groups of respondents confirmed the existence of center-based learner support system in the colleges/universities. Accordingly, 85.3% of the academic staff and 97.4% of students asserted the above claim. This is very important for it enables learners to get required support from where they attend their lessons without requiring them traveling to the head centers (Mills, 2003).

Different kinds of center-based learner support systems could be rendered. The more varied the ranges of center-based supports are given, the better will learners be benefited from them. The following table summarizes some kinds of center-based learner support system an institution could provide.

**Table 4.20 Frequencies and Percentage Distribution of Some Aspects of Learner Support System (Kinds of Center-based Support)**

Item Description (Kinds of support in the center)	Respondents						
		Academic Staff (N=64)			Students (N=115)		
		App.	Not App.	$\chi^2$	App.	Not App.	$\chi^2$
Student newspaper	F	4	60	49.00*	3	112	103.31*
	%	6.3	93.7		2.6	97.4	
Setting up computers	F	3	61	52.56*	3	112	103.31*
	%	4.7	95.3		2.6	97.4	
Downloading software	F	4	60	49.00*	3	112	103.31*
	%	6.3	93.7		2.6	97.4	
Operating programs	F	9	55	33.06*	7	108	88.70*
	%	14.1	85.9		6.1	93.9	
Institutional website	F	11	53	70.71*	-	115	-
	%	17.2	82.8		-	100	
Course based website	F	-	64	-	-	115	-
	%	-	100		-	100	
Financial aid	F	25	39	3.06	49	66	2.51
	%	39.1	60.9		42.6	57.4	
Library service	F	53	11	27.56*	80	35	17.61*
	%	82.8	17.2		69.6	30.4	
Book store service	F	48	16	39.5*	65	50	1.96
	%	75.0	25.0		56.5	43.5	
Course syllabus	F	20	44	39.5*	18	97	134.73*
	%	31.3	68.7		15.7	84.3	

App. = Applicable

\*Statistically Significant Chi-square Value at  $\alpha = 0.05$

As presented in Table 4.23, kinds of center-based support systems labeled by student newspaper, setting up computers, downloading software, operating programs, institutional website and course based website were shown to be non-existent by both the academic staff and students for between 82.8% to 100% of the academic staff said 'Not Applicable' and between 93.9% and 100% of students confirmed its inapplicability as far as the existence of the above kinds of center-based support systems are concerned. The provision of financial aid support system could not be purely identified. The chi-square values for the two groups were found to be 3.06 and 2.51 showing that there was no significant difference between the responses 'Applicable' and 'Not Applicable'.

Library service was confirmed to exist as a center-based support system by both groups of respondents for 82.8% of the academic staff and 69.6% of students said that it was applicable. This helps learners get important references for their studies which they might probably not get from other educational institutions. Book store service is another kind of center-based support system confirmed to exist by the academic staff with 75% of them agreeing to it. Percentages computed from the responses of students could not depict this. The difference between the two sets of responses was found to be very insignificant for the chi-square value

was 1.96. Provision of course syllabus was not among the kinds of center-based support systems provided by the colleges/universities as 68.7% and 84.3% of the academic staff and students respectively chose for 'Not Applicable' in this regard.

This implies that there were only two forms of center-based learner support systems, namely library and bookstore systems being rendered for learners in the colleges/universities. Advanced ones and more technology related support systems in the centers are not provided.

There are some standards that a learner support system has to meet. In this section these standards are referred to as evaluation criteria. The following table is therefore a summary of the responses gathered from respondents related to these evaluation criteria.

**Table 4.21 Frequencies and Mean Distribution of Some Aspects of Evaluation of Learner Support System**

NO	Item Description	Respondents										t
		Academic Staff (N=75)					Students (N=115)					
		M (4)	PM (3)	DM (2)	NA (1)	X*1	M (4)	PM (3)	DM (2)	NA (1)	X*1	
1	Assisting the learner in effectively utilizing resources provided	24	27	21	3	2.96	52	33	23	7	3.13	-1.25
2	Technology support	20	23	29	3	2.80	52	30	33	-	3.16	-2.85**
3	Technical support	14	33	19	9	2.96	58	27	27	3	3.22	-3.91**
4	Access to library	11	34	28	2	2.72	15	71	25	4	2.84	-1.18
5	Advising/counseling	14	27	22	12	2.57	17	46	43	9	2.62	-0.33
6	Problem solving	7	33	27	8	2.52	47	33	28	7	3.04	-3.93**
7	Convenience to diverse group	11	30	27	7	2.60	42	57	36	-	2.88	-2.45**
8	Efficiency to diverse group	5	33	25	12	2.41	21	57	37	-	2.86	-3.98**
9	Responsiveness to diverse group	11	25	29	10	2.49	3	75	34	3	2.68	-1.73
10	Accurate disclosure of information	12	33	18	12	2.60	13	72	30	-	2.85	-2.26**
11	Orientation on all information	12	22	32	9	2.49	24	61	24	6	2.90	-3.24**
12	Regular revision of support system for their currency.	7	29	29	10	2.44	17	54	41	3	2.74	-2.58**
13	Regular revision of support system for their effectiveness.	7	25	25	18	2.28	24	42	43	6	2.73	-3.42**

[1.00-1.25=Not Applicable, 1.26-2.25=Do not Meet Evaluation Criteria, 2.26-3.25= Partially Meets Evaluation Criteria, 3.26-4.00=Meets Evaluation Criteria]

\*1=Calculated Means across Cells \*\*=Statistical Difference among Mean Values at  $\alpha = 0.05$  and  $df = 188$

The variables indicated in Table 4.24 represent some of the evaluation aspects a learner support system could be evaluated against. The more they meet the evaluation criteria, the better the learner support system is.

As we go down from Item 1 through 13 of Table 4.24, we see that all the mean ratings for both the academic staff and students lie in the range that their respective variables only partially meet evaluation criteria. The mean values for the academic staff range from 2.28 to 2.96 and that of students lie between 2.73 to 3.22. Though in many of the variables the t-test values indicated statistically significant difference between the mean values of the two groups of respondents, all the mean values of both still existed in the partially meets category.

The need for advancing this to a level that meets evaluation criteria is very important for learner support systems are very important in solving the different kinds of problems students face and stretching a smooth relationship between learners and the colleges/universities.

#### **4.6 Institutional Technology Capability**

An institution providing DL must develop technological capability which starts with forming an interdisciplinary team and goes to having a well organized technology plan. The following discussion emphasizes on the technological capability.

The first step in building technological capability is forming an interdisciplinary team comprising of different important people. Responses depicted that while 41.3% of the academic staff confirmed the existence of the team, 46.7% said that such a team did not exist in the colleges/universities. Only 12% of the respondents do not know as to whether or not the team has been formed. The difference between those who said 'Available' and 'Not Available' was insignificant and can not boldly be said that such a team existed in the colleges. According to Shreiber (1998), the existence of such a team is very important in responding to staff and management inquiries and recommendations.

Questions were asked for those who said there was an interdisciplinary team to investigate from which groups people were included in the team. The more diversified the group of people the team includes, the better its success will be. The following table summarizes the responses from the academic staff in this regard.

**Table 4.22 Frequencies and Percentage Distribution of Some Aspects of Technological Capability (Involved in the Team)**

NO.	Item Description (Involved/included in the team)	Academic Staff (N=31)				X <sup>2</sup>
			Ava.	Not Ava.	Not known	
1	Executive branch	f	26	5	-	14.23*
		%	83.9	16.1	-	
2	Instructional design	f	28	3	-	22.53*
		%	90.3	9.7	-	
3	Information Technology (IT)	f	28	3	-	6.53
		%	90.3	9.7	-	
4	Net working systems	f	9	14	8	2.60
		%	29.0	45.2	25.8	
5	Broadcasting communication	f	9	14	8	1.40
		%	29.0	45.2	25.8	
6	Training/professional consulting	f	26	4	1	34.20*
		%	83.9	12.9	3.2	

Ava. = Available

\*Statistically Significant Chi-square Value at  $\alpha = 0.05$

Executive branch includes members of the management. As can be seen from Item 1 of Table 4.26, 83.9% of the respondents said that the interdisciplinary team included people from the executive branch. This is helpful in making important decisions for usually the decision making lies on the hands of these bodies of the institution. Instructional designers were also indicated to be included in the team as confirmed by 90.3% of the respondents. This also is very important because these are the ones who are directly responsible for designing the courses. Twenty eight (28) out of 31 respondents said that the team contained people from the Information Technology (IT) department. Since, assisting the DL system with emerging technologies is very important, the inclusion of people from this department would help. Networking systems experts and broadcasting communications experts should have been part of the team. The responses in Items 4 and 5, however, depicted the fact that these can not for sure be said that they were included in the team. This is because the chi-square values computed did not show statistically significant differences among the three sets of responses. Their inclusion is a vital one for in a technology assisted DL system needs for networking and forming communication among centers, courses, learners and tutors is very high (Shreiber, 1998). Training/counseling professionals were also shown to exist in the colleges/universities' team for 83.9% of the respondents asserted the fact as so. The discussion implies that the teams in the colleges/universities are comprised of four major bodies. Two important departments' participation is yet to be entertained.

Once the team is set in such a way, the next step is to design a well organized technology plan. Having members from the mentioned departments does not by itself help institutions have technological capability. The technological capability of the institutions depends on whether or not a sound technology plan exists (Shreiber, 1998). The academic staff was therefore asked to rate on the extent to which emphasis was placed forward for technology plan in the colleges/universities as summarized by the following table.

The extent to which the colleges/universities place emphasis was found to be less with a mean value of 2.19. Lack of the plan would lead to very less technological capability since all the other steps are performed based on the technology plan. Interviewed deans have also shown that their colleges/universities were very far from reaching technological capability specifying that they have not even formulated a technology plan. According to Shreiber (1998), it is this plan that incorporates techniques of identifying and selecting technology to deliver DL. Failure to have it would immediately mean a poor technological capability in the institutions.

#### 4.7 Government Initiatives in Supporting Technology Application in Distance Learning

The sole effort of DL institutions might not be enough to effectively render a technology assisted service. Some level of input from the government is required in areas where the colleges and universities could not address. Elements of such type are summarized in the table below including the responses of the respondents.

**Table 4.23 Mean and ANOVA Distribution of Some Aspects of Government Support to Promote Technology Assisted DL Program**

No.	Item Description	Mean Values				F
		UU*1 (N=22)	AUC*2 (N=20)	SMUC*3 (N=22)	CSC*4 (N=11)	
1	Invests in infrastructure	3.00	2.55	2.27	2.91	1.48
2	Reviews fiscal policy to favor educational use of technologies	3.14	2.40	2.95	2.91	1.74
3	Reviews fiscal policy to favor non-profit use of technologies	3.14	2.20	2.86	2.73	3.14
4	Reorients funding policies	3.32	2.15	2.27	2.82	4.26
5	Funds technology mediated projects	3.27	2.30	2.45	2.36	4.52
6	Funds projects that ensure access to technology	3.14	2.40	3.00	2.55	2.68
7	Promotes teacher training that uses technology	3.14	2.55	2.55	2.36	2.06
8	Simplifies regulations requirements to facilitate transfer of credit	2.86	2.45	2.68	3.18	1.07
9	Simplifies accreditations requirements to facilitate transfer of credits	3.27	2.50	2.68	3.00	2.85
10	Implements standards of quality	3.05	2.05	2.77	3.36	5.20
11	Networks educational institutions	2.91	2.45	2.36	2.55	1.10

[4.50-5.00=Strongly Agree, 3.50-4.49=Agree, 2.50-3.49=Uncertain, 1.50-2.49=Disagree, 1.00-1.49=Strongly Disagree]

\*1=Unity University, \*2= Alpha University College, \*3= Saint Mary's University College, \*4= Civil Service College

df = 74     $\alpha = 0.05$

As can be seen from Table 4.28, 11 questions were asked to investigate the level to which government support for the colleges/universities exists. Respondents were uncertain about the government's investment on infrastructure that could facilitate application of technology for the mean values of the three, UU, AUC and CSC, were found to be 3.00, 2.55 and 2.91 respectively. SMUC respondents said that the government did not invest in infrastructure. Deans in the interview have indicated that this was the major area that the government did not take any action. Reviewing fiscal policies to favor both educational and non-profit use of technologies was also found to be a variable not shown to exist or not to exist for the mean values ranged from 2.73 to 3.14 in the three colleges. Respondents from AUC showed that the two practices were not eminent by the government. While UU and CSC were uncertain on whether the government reorients funding policies, AUC and SMUC respondents said no it did not with mean values 2.15 and 2.27 respectively. Except UU, the other three colleges did not agree with the idea that says the government funds technology mediated projects. Projects that have access to technology need funding. Responses indicated uncertainty in this regard too. AUC respondents, however, said that the practice was not there at all for they disagreed as indicated by mean value of 2.40. Promotion of teacher training institutions that use technology was not a practice either for CSC for the mean value computed depicted this with 2.36. Computed mean values for the variables simplification of regulations and accreditation procedures depicted uncertainty from the respondents. Standards of quality are very important to be set by the government so that easy control in the progress is maintained. Respondents in the three colleges, UU, SMUC and CSC, did not know whether these qualities were set by the government or not. Respondents from AUC expressed their disagreement with the idea that says qualities were set for the mean value computed was 2.05. Interview result indicated that this was one of the things they wanted to get from the government and not applicable. Taking an initiative to network educational institutions is another support the government could give for colleges/universities. AUC and SMUC respondents said that this support was not given by the government. The rest were not sure as to whether this was being done by the government or not for the means computed were found to be 2.91 and 2.55.

From the above discussion it could be deduced that there does not exist a clearly identified support from the government for DL institutions to promote the application of technologies. According to Pandey (2007), government agencies should be a key player in the expansion of educational projects that depend on technology. This, however, is not the case in Ethiopia.

#### 4.8 Problems Encountered in an Attempt to Use Technology

A college/university might face different problems in its attempt to effectively establish a technology enhanced DL system. Knowing these factors would help proactively tackle them with a variety of options. The following table presents responses found from the academic staff regarding problems encountered.

**Table 4.24 Mean and ANOVA Distribution of Some Aspects of Problems Encountered in Promoting Technology in DL**

No.	Item Description	Mean Values				F
		UU*1 (N=22)	AUC*2 (N=20)	SMUC*3 (N=22)	CSC*4 (N=11)	
<b>I</b>	<b>Access</b>					
1	Lack of access to computers	3.64	3.10	3.68	4.18	1.39
2	Lack of access to tape recorder	3.41	3.30	3.27	3.22	0.63
3	Lack of access to television	2.86	3.00	3.00	3.33	1.31
4	Lack of access to the Internet	4.32	3.05	3.09	4.18	7.28
5	Lack of access to telephone	2.64	3.25	3.14	3.45	1.33
6	Sustainability in the use of technology	3.91	2.95	3.91	4.36	4.67
7	Scarce financial resource	3.64	3.35	3.68	4.00	1.00
<b>II</b>	<b>Attitude</b>					
8	Attitude of learners	3.77	4.15	3.05	4.18	5.09
9	Attitude of tutors	3.64	4.00	3.09	4.00	4.13
10	Attitude of administrators	3.45	3.65	3.45	4.00	0.77
<b>III</b>	<b>Infrastructure</b>					
11	Lack of technology training centers	3.95	3.95	3.50	4.09	2.41
12	Lack of good bandwidth connectivity	4.36	3.95	3.86	4.55	6.36
13	Lack of electricity	3.68	3.50	3.50	4.18	3.96
14	Lack of transpiration	3.82	3.65	3.68	4.09	2.25
15	Lack of service centers	3.68	3.55	3.86	4.09	1.79
<b>IV</b>	<b>Others</b>					
16	Being engaged in technology centered approach	3.73	2.85	3.77	3.73	2.82
17	Lack of technological capability	4.14	4.20	4.41	4.27	0.23
18	Lack of trained human resources	3.59	3.85	3.58	3.91	1.24
19	Dependence on donors	3.64	2.40	3.32	3.36	3.37
20	Poor supply facility	4.05	3.56	3.64	4.27	3.21
21	Poor background knowledge of students	3.05	2.15	3.14	4.09	7.61
22	Large number of students	3.62	3.70	4.00	3.64	3.56
23	Lack of support from the government	3.27	2.55	3.45	3.24	2.79
24	Inadequacy of time to practice the technology	3.14	2.85	3.50	3.44	1.36
25	Inability to integrate with the curriculum	3.14	2.70	3.00	3.82	2.43
26	Inability to integrate with teaching activities	3.05	2.45	3.50	4.36	6.10
27	Inability to integrate with the content	3.49	3.45	3.49	3.09	2.76
28	Inability to integrate with the objectives	3.59	2.80	3.05	4.18	4.02
29	Uncomfortable feeling of teachers with technology	3.27	2.55	3.09	3.43	2.24

[4.50-5.00=Large, 3.50-4.49=Somewhat Large, 2.50-3.49=Moderate, 1.50-2.49=Less, 1.00-1.49=Very Less]

\*1=Unity University, \*2= Alpha University College, \*3= Saint Mary's University College, \*4= Civil Service College df = 74  $\alpha = 0.05$

Lack of access to different technology materials is one of the barriers many institutions are confronted with. Accordingly questions were asked to investigate whether technologies stated from Item 1 to 5 of Table 4.29 were accessible or not. Access to computers was a problem as depicted by UU, SMUC and CSC with mean values 3.64, 3.64 and 4.18 respectively. Access to tape recorders and television was found to be only a moderately existing problem in the colleges as confirmed by mean values ranging from 2.86 to 3.41 in all the four colleges. The Internet is one of the technologies whereby colleges/universities support their teaching learning process. Access to it as responded by UU and CSC was found to be a large problem for the mean values computed asserted this with 4.32 and 4.18. Respondents from AUC and SMUC have shown that access to the Internet was only a moderate problem. Telephones were rated to be only moderately inaccessible for the mean values computed ranged from 2.64 to 3.45. Therefore, computer and the Internet are the two major technologies in which access to them was found to be a large problem.

Sustainability in the use of the technology was a large problem as confirmed by mean values of 3.91, 3.91 and 4.36 in UU, SMUC and CSC. A scarce financial resource was also found to be a large problem for all the four colleges/universities. Attitude of the different groups might happen to be a problem if it is a negative one. Items 8 to 10 include questions related to attitude. Attitude of learners was found to be a large problem as confirmed by mean values ranging from 3.55 to 4.18. The same was true for attitude of tutors for the mean values ranged from 3.59 to 4.00.

Lack of infrastructure is another problem colleges/universities face in applying technology in the DL system. Questions from Item 11 to 15 include some infrastructure elements the institutions might face as elements. Lack of technology training centers, bandwidth of connectivity, transportation and service centers were all found to be large problems encountered by the colleges/universities for the mean values computed confirmed this with values ranging from 3.50 to 4.55. It therefore could be said that the institutions are facing an infrastructure problem to use technologies. This was also backed by the responses of the deans in the interview.

A tendency to be engaged in technology-centered approach was found to be a large problem for UU, SMUC and CSC. AUC respondents indicated that this was only a moderate problem with a mean value of 2.85. Lack of technological capability and trained human resources were other large problems encountered as rated by all of the respondents in the four colleges/universities. Dependence on donors is a moderately existing problem for three of the colleges and is not even a problem for AUC for the mean value computed from the responses of its respective respondents depicted this with 2.40. Poor supply of facilities was a large problem for the colleges/universities attempting to backup their DL program with technologies. This was confirmed by the mean values that ranged from 3.56 to 4.27. Students' poor background knowledge was only a moderate problem except for CSC. Respondents from CSC showed that this was a large problem with a mean value 4.09. Having a large number of students was indicated to be a large problem in all the four colleges/universities. Lack of support from government and inadequate time to practice technologies were moderate problems as confirmed by mean values that ranged from 2.55 to 6.34 and 2.85 to 3.50 respectively.

Inability to integrate technology with different parts of instructional design might be a problem. Questions 25 to 28 present some elements that technology could be integrated with. Except for CSC, integrating technology with curriculum was a moderate problem. Respondents from CSC indicated that it was a large problem with a mean value of 3.82. Integrating technology with teaching activities was a lesser problem for AUC, a moderate problem for UU and SMUC and a large problem for CSC as depicted by mean values 2.45, 3.05, 3.50 and 4.36 respectively. Integrating with contents was only a moderate level problem in the colleges/universities. As far as integrating technology with learning objectives is concerned, responses indicated that this was a large problem for UU and CSC and only a moderate one for AUC. Tutor's uncomfortable feeling was only a moderate problem in the colleges/universities for mean values ranged from 2.55 to 3.43.

Figuring out what problems exist in the colleges/universities would help in designing different mechanisms of overcoming them. Harry and Khan (1997) strongly suggest that an organization should not only know its strengths but also some of the challenges it is facing.

## **4.9 Attitude towards Technology Related Issues**

In this section, two major approaches for identifying the attitude of both the academic staff and students are discussed. The first one takes a general approach on checking attitudes towards technology and the second checks on attitudes specific to application of technology in instructions in DL.

### **4.9.1 Attitude towards Technology**

The following table summarizes items related to the attitude of respondents to technology. Both positive and negative views were included so that a fair share of the two groups is entertained. In order to analyze these items of attitude, ratings for negative items were reversed so that the mean value computed is meaningful and logical.

As can be seen from Table 4.25, the mean values computed from the responses of the academic staff are greater than those of students except for Items 16 and 17 which were related to doing as little work as possible with technology and technology taking long time to finish work. The t test values computed did not show significance statistical difference between the responses of the academic staff and students for these two items. The response rates from the academic staff were found to be significantly higher than that of students in 17 of the 25 (68%) items. The gross means calculated from the mean values of each item were found to be 3.93 and 3.34 for the academic staff and students respectively. As indicated in the key under the table, 3.93 falls in the range of agreement and 3.34 in uncertainty. This depicts that the academic staff of the universities/colleges had positive attitude towards technology while that of students was not disclosed as positive or negative.

**Table 4.25 Frequency and Mean Distribution of Attitude Elements (General Attitude towards Technology)**

No.	Item Description	Respondents		
		Academic Staff (N=75)	Students (N=115)	t
		Mean	Mean	
1	I enjoy doing things with technology.	4.23	3.99	1.23
2	I am tired of using technology.	3.79	3.35	2.17*
3	Working with technologies makes me very nervous.	4.05	3.36	3.66*
4	Learning about technologies is boring to me.	4.22	3.43	4.32*
5	I think working with technology would be enjoyable.	4.00	3.26	4.88*
6	I will be able to get a very good job if I am good in technologies.	3.88	3.43	3.55*
7	I would work harder if I could use technologies more often.	4.29	3.30	7.14*
8	I know that technologies give me opportunities to know many new things.	4.33	3.13	7.00*
9	Technologies are difficult to use.	3.64	3.47	0.89
10	I get a sinking feeling when I think of trying to use technology.	4.19	3.15	5.76*
11	One can learn from books than from technology innovations like computers.	3.72	3.47	1.49
12	Working with technologies increases self-confidence.	4.23	3.68	3.13*
13	Technologies isolate people by inhibiting normal social interaction among users.	3.57	3.34	1.14
14	Using technologies saves me some time.	3.99	3.70	1.91
15	Using technologies saves me some work.	4.01	3.55	2.75*
16	I will do as little work with technologies as possible.	3.44	3.80	-1.93
17	I think that it takes a long time to finish work when I use a technology.	3.23	3.26	-0.18
18	Using technologies does not scare me at all.	3.91	3.57	1.87
19	Using a technology is very frustrating.	3.84	3.38	2.37*
20	I believe that it is very important for me to learn how to use a technology.	4.03	3.52	3.55*
21	Knowing how to use technology is a worthwhile skill.	4.03	3.14	5.48*
22	I do not understand how some people can spend so much time working with technology outputs and seem to enjoy.	4.08	3.50	3.69*
23	Figuring out technology problems does not appeal to me.	3.68	3.17	3.08*
24	I have a lot of self-confidence when it comes to working with technologies.	3.96	3.46	3.21*
25	I do not think of any way that I will use technologies in my career.	3.85	3.58	1.59
<b>Gross Mean</b>		<b>3.93</b>	<b>3.34</b>	

[4.50-5.00=Strongly Agree, 3.50-4.49=Agree, 2.50-3.49=Uncertain, 1.50-2.49=Disagree, 1.00-1.49=Strongly Disagree]

\* = Statistical Significance differences at  $\alpha = 0.05$  and  $df = 188$

While having positive attitude towards the application of technology in the DL system is very important, the attitude of both learners and the academic staff towards technology in general is also vital. Proceeding with new technologies with technology-phobic people might not result in achieving the desired outcome. The fact that students were uncertain about their attitude towards technology might end up being a problem for the universities/colleges.

#### 4.9.2 Attitude towards Using Technology in Distance Learning

Having a positive attitude towards technology is not by itself a proof for deducing that respondents have positive attitude towards the application of technology in distance learning.

The following table is a summary of questions related to attitude of both groups of respondents towards the use of technology in distance learning.

**Table 4.26 Frequency and Mean Distribution of Attitude Elements (Attitude towards the Use of Technology in DL)**

No.	Item Description	Respondents		
		Academic Staff (N=75)	Students (N=115)	t
		Mean	Mean	
1	Technology can be a useful instructional aid in almost all subject areas of distance learning.	4.14	3.42	3.93*
2	Using technology in instruction increases distance learners' motivation.	4.21	3.69	3.18*
3	Technology helps distance learners to become more critical thinkers.	4.08	3.37	4.34*
4	Technology helps distance learners to solve relevant, real life problems.	4.32	3.79	3.75*
5	The use of technologies creates more interaction between distance learners enrolled in the course.	3.70	3.34	2.22*
6	The use of technologies creates more interaction between distance learners and instructors.	4.01	3.61	2.65*
7	The use of technologies makes the distance learner feel more involved.	4.15	3.31	5.06*
8	Technology should dominate distance learning instruction in the teaching learning process.	3.27	3.30	-0.31
9	The use of technology in distance learning complicates the instruction.	3.50	3.28	1.29
10	Technology should only be used to facilitate the teaching learning process of the distance learning program.	3.76	3.63	0.94
11	Technologies make me feel like I am not using my all potential when I use technology in my studies.	3.99	3.44	3.54*
12	Technologies provide better access of presenting a distance learning course.	4.11	3.70	2.51*
13	The use of technologies in the instruction will make the distance teaching learning boring.	3.96	3.63	1.77
14	Technologies serve as effective means of disseminating information in the distance instruction.	4.28	3.45	4.98*
15	Technologies do not give enough room for distance learners to critically think.	4.03	3.54	3.15*
16	Technology helps distance learners construct new knowledge/concept.	4.12	3.65	3.54*
17	It would rather be important to concentrate on contents than technology use in distance learning.	3.53	3.68	-0.85
18	Technology helps distance learners in communicating knowledge/information.	3.76	3.39	1.26
19	The use of technologies as instruction in distance learning reduces the personal treatment of learners.	3.81	3.37	2.53*
20	Technologies inhibit the creativity of distance learners when used as instructional delivery option.	3.60	3.20	1.65
21	Technology provides more interaction in distance learning, minimizing the absence of the instruction.	3.82	3.06	4.92
<b>Gross Mean</b>		<b>3.91</b>	<b>3.31</b>	

[[4.50-5.00=Strongly Agree, 3.50-4.49=Agree, 2.50-3.49=Uncertain, 1.50-2.49=Disagree, 1.00-1.49=Strongly Disagree]

\* = Statistical Significance differences at  $\alpha = 0.05$  and  $df = 188$

As far as attitude of respondents in using technology in distance learning is concerned, it was confirmed to be true that the academic staff and students have positive and neutral attitudes towards the application of technology in as indicated by the gross mean values 3.91 and 3.31 respectively. As can be seen from Table 4.31, in 62% of the items of the responses from the

academic staff were found to be significantly higher than that of students. Though students rated higher in two items, the t values for these showed insignificant difference between the two groups of respondents. Here again, while it would be valuable for the colleges to have positive attitudes from the staff in applying technology in distance learning, it still is a concern for the colleges to have students who are not sure as to whether technology should be applied in the teaching learning process of distance learning.

Attitude might vary with some independent variables. The following table summarizes the cross tabulation result of five independent variables with some elements of attitude of learners and the academic staff towards the use of technology in DL.

**Table 4.27 Pearson's R. Correlation Distribution of Attitude Elements towards the Use of Technology in DL with Age, Sex, Academic Status, Specialization and Year of Study**

No.	Item Description	Age (N =190)	Sex (N = 190)	Academic Status (N = 75)	Specialization (N = 75)	Year of Study (N = 113)
1	Technology can be a useful instructional aid in almost all subject areas of distance learning.	0.03	0.03	-0.25	0.06	0.10
2	Using technology in instruction increases distance learners' motivation.	0.14	0.16	-0.01	-0.13	-0.05
3	Technology helps distance learners to become more critical thinkers.	0.07	0.09	-0.10	-0.21	0.15
4	Technology helps distance learners to solve relevant, real life problems.	-0.08	0.21	0.14	-0.08	0.18
5	The use of technologies creates more interaction between distance learners enrolled in the course.	-0.09	0.02	-0.24	-0.16	0.45*
6	The use of technologies creates more interaction between distance learners and instructors.	0.03	0.03	0.29	-0.30	0.24
7	The use of technologies makes the distance learner feel more involved.	-0.05	0.07	0.35	-0.12	0.16
8	Technology should dominate distance learning instruction in the teaching learning process.	-0.03	0.04	-0.24	-0.11	0.18
9	The use of technology in distance learning complicates the instruction.	0.18	-0.06	-0.13	-0.27	0.01
10	Technology should only be used to facilitate the teaching learning process of the distance learning program.	-0.20	-0.10	0.00	0.08	0.08
11	Technologies make me feel like I am not using my all potential when I use technology in my studies.	-0.11	-0.07	-0.42*	-0.14	0.03
12	Technologies provide better access of presenting a distance learning course.	-0.10	-0.03	0.14	0.09	0.07
13	The use of technologies in the instruction will make the distance teaching learning boring.	-0.04	-0.16	0.16	-0.46	0.07
14	Technologies serve as effective means of disseminating information in the distance instruction.	0.03	0.01	0.04	-0.10	0.07
15	Technologies do not give enough room for distance learners to critically think.	-0.22	-0.06	0.17	-0.20	-0.09
16	Technology helps distance learners construct new knowledge/concept.	0.05	-0.06	0.21	0.00	-0.01
17	It would rather be important to concentrate on contents than technology use in distance learning.	0.18	-0.08	-0.01	-0.28	0.06
18	Technology helps distance learners in communicating knowledge/information.	-0.02	-0.02	0.28	-0.01	-0.12
19	The use of technologies as instruction in distance learning reduces the personal treatment of learners.	-0.10	-0.06	-0.34	-0.25	0.03
20	Technologies inhibit the creativity of distance learners when used as instructional delivery option.	0.09	0.00	0.02	0.00	-0.06
21	Technology provides more interaction in distance learning, minimizing the absence of the instruction.	-0.21	-0.01	-0.20	-0.17	-0.20

As can be seen from the above table, only little level of correlation was found to be existent between the independent variables age, sex, academic status, specialization and year of study of learners for in most cases the calculated r value was very close to either 0.1 or -0.1. It was

only in two variables of attitude that a relatively moderate level of correlation was indicated in the independent variables academic status and year of study. Responses found on whether or not using technologies make respondents feel like they are not using their potential depicted a moderate level of correlation with the academic status of the staff with an r value of 0.42. Regarding technologies creating more interaction between learners, responses indicated that it was moderately correlated with year level of learners for the r value computed depicted this with a value of 0.45.

Generally speaking, it could be said that there was no strong relationship between the independent variables (age, sex, academic status, specialization and year of students) and attitude of learners towards technology in the colleges/universities. That is, variation in the independent variables does not either positively or negatively affect the attitude of learners towards the use of technology in distance learning.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

In this chapter, major findings of the study are summarized and conclusions based on the findings are drawn. The chapter also includes recommendations forwarded based on the assumption that they could be remedies for problems investigated in the study.

#### 5.1 Summary of Major Findings

The major purpose of this study was investigating the practices and problems of technological interventions in distance learning colleges/universities of Addis Ababa. To meet the purpose of the study, the following six procedural steps were undertaken: (1) gathering background information from relevant sources, (2) designing the basic questions to be answered, (3) defining the variables of the study, (4) developing the instruments for data collection, (5) selecting the method for identification of respondents who could readily provide information and (6) completing the analysis of data. To this effect, the following basic questions were asked:

1. To which technological generation of distance learning do the colleges/universities belong?
2. What factors have been considered in selecting technologies being used in the colleges/universities?
3. To what extent are existing technologies integrated with elements of distance learning instructional design?
4. To what extent do existing technologies enhance the learner support system?
5. What are the problems confronted by the colleges/universities in the use of technologies in distance education?
6. To what extent does the government take the initiatives to support technology enhanced distance learning programs?
7. What are the attitudes of learners and the academic staff of the universities/colleges towards the use of technologies in the distance education program?

The study was conducted using questionnaires, interviews and document reviews as instruments/tools of gathering data. Four distance learning colleges/universities were included in the study using simple random sampling technique. All the 200 respondents in the study were included using different sampling techniques, namely purposive sampling, stratified sampling, quota sampling and systematic sampling. Collected data was then organized, analyzed and interpreted using different statistical tools, with the help of SPSS. The major statistical tools applied were frequencies, percentages, means, chi-squares, t-tests and one-way ANOVA. Based on the analysis the major findings of the study are organized hereunder.

#### **5.1.1 Respondents' Background**

The majority of the academic staff (41.33%) was found to be in the age group between 36 and 45 and more than 73.04% of the student respondents were older than 36 years.

Females' involvement in the academic staff was very minimal for it was found that they were only 14.67% of the total respondents. About 31.30% of the students were female.

About 62.67% of the academic staff respondents were found to be paid above 2,501 Birr. Out of these 33, 70.21% were those who had an overall experience of 11 years and above.

Academic staff respondents were composed of 66.67% and 33.33% of BA/BSC and MA/MSC holders respectively the majority of which were from social science department.

#### **5.1.2 Findings Related to Aspects of Technological Interventions**

It was found that print was the technology always used in the distance learning program as confirmed by mean values 4.88 and 4.81 by the academic staff and students respectively.

Technologies like radio, television, video conferencing, electronic mails, computer conferencing, CD-ROMs and the World-Wide-Web were not used in the colleges to support the teaching learning process.

It was revealed that audio cassettes and video tapes were used occasionally in the teaching learning process as depicted by mean values ranging from 2.34 to 2.75.

Print-based technology, confirmed to be used always in the above section, did not include print types called journals and articles.

It was disclosed that the colleges/universities considered the factors related to opportunities that exist in the external environment, accessibility and cost before selecting existing technologies. Many other factors were indicated to be either inexistent or respondents were uncertain about them.

Existing technologies were reported by both groups of respondents to be integrated with the learning objectives and contents for the majority of the variables were rated above the average rate.

The technologies being used have not properly been integrated with the instructional design elements related to delivery strategy, interactivity and learning assessment in the colleges/universities.

It was found that there existed an individualized learner support system as confirmed by 54.7% and 71.7% of the academic staff and students. Responses also indicated that this system was supported to a greater extent by telephone technologies and face to face meetings. While mails being moderately used technologies, the individualized learner support system was not supported by technologies like emails and faxes.

The existence of group-based learner support system was found to be tutorials and not audio conferencing and peer group learner group support systems. The tutorials were indicated to give major emphasis to only introducing contents in broad terms and not much more.

Respondents showed that counseling was an element of the colleges/universities learner support system as indicated by 90.7% of the academic staff and 91.3% of students. The counseling service was assisted only by telephone and face to face meetings, other technologies, mail, emails and faxes, were shown not to be used.

It was found that center based learner support system existed in the DL system of the colleges/universities as responded by 85.3% and 97.4% of the academic staff and students

respectively. The center-based support system was limited to providing only library and bookstore services. Other services, which one could provide in centers, like news papers, setting up computers, downloading soft wares, operating programs, institutional and course based website, financial aid and providing course syllabus were not indicated to exist.

It was found to be difficult to draw a direction as to whether an interdisciplinary team existed in the colleges/universities or not for 41.3% confirmed its existence and 46.7% said they did not have such a team while 12% said they did not know. Those who said that the team existed confirmed that the team included people from executive branch, instructional design department, IT department and training/counseling professionals and not from networking systems and broadcasting communications.

It was found that the universities/colleges did not have a technology plan.

Significant level of uncertainty was indicated as to whether the government took initiative to promote technology-assisted distance learning programs in the country.

Having access to computer and internet technologies was found to be a problem. Access to technologies like tape recorder, television and telephone were found to be problems at most to a moderate level and otherwise they were not indicated to have access problems.

Scarce financial resources, attitude of learners towards technology, lack of infrastructure, lack of technological capability and trained human resources were indicated to be some of the major problems encountered in attempting to assist DL with technology.

The attitude of the academic staff towards technologies in general was found to be positive as depicted by the gross mean values 3.84 unlike the students who were found to be just moderately affiliated towards technology.

The academic staff was found to have positive attitude towards the application of technology in DL while students were uncertain in general terms about using technology in DL.

The study disclosed that there was a minimal relationship between the independent variables age, sex, academic status, specialization and year of study and attitude towards the use of technology in distance learning.

## 5.2 Conclusions

Based on the major findings, the following conclusions were drawn.

1. The prominent technology being applied in the colleges/universities was disclosed to be print where students get printed materials in the form of modules and assignment papers to attend their studies. The print technology being used in the colleges/universities was not found to be supported by some important elements of print materials like journals and articles necessary for the DL system. This technology was indicated to be backed by a small level of video tapes and audio cassettes application in the DL system. These technologies are good inputs for the teaching learning process for some lessons which might not be well taught using print technologies could be supported by them. The colleges/universities, however, did not use technologies like radio, television, video conferencing, emails, CD-ROMs and the World Wide Web which happen to be very important in improving access, increasing efficiency, improving quality, providing just in time learning and allowing learner-centered approaches. Even though there was a small level of application of technologies in the second generation to back the print based DL program, it can be concluded that the colleges/universities were found only in the first generation of distance learning technologies. The missing technologies could have given an opportunity of presenting information in the form of text, graphics, audio and video. The technology in the first generation does not provide benefits like time, pace and place flexibility for learners which happen to be very important elements of distance learning. The lack of technologies of the recent generations in the universities/colleges could be a reason for poor learner-learner, learner-content, learner-tutor and learner-institution interactivities indicated to exist in the colleges/universities. The inability to use technologies of the other four generations might also impede the effective provision of lesson for distance learners.

2. A technology available in the market should not be used in DL only because it is there. The colleges/universities have taken some steps in considering some of the factors that are very important in selecting technologies. Factors related to opportunities that exist in the external environment, accessibility of the technology and costs of the technology material were among the ones considered by the colleges/universities. It would be reasonable to presume that this helps the institutions from unnecessary frustrations that might result from the failure of the technologies if done without a serious consideration of these factors. Other factors related to novelty, user friendliness, teaching and learning process, interactivity and speed of the technology were not found to be considered in the colleges/universities. These factors are equally important with the former mentioned ones to be used by the colleges/universities. The consideration of only the three factors does not suffice for the effective selection of technologies in the institutions. One of the missing factors might adversely affect the other good ones contributing to the inappropriate selection of technologies and hence affecting the teaching learning process in general.
  
3. It was revealed in the study that the existing technologies in the colleges/universities were well integrated with the instructional design elements of learning objectives and learning contents. It can be said that this act of integration helps the institutions in clearly defining, communicating and designing objectives and installing different ideas and points in the content that go inline with existing technologies. It was, however, disclosed that the technologies being used were not properly integrated with the other important instructional design elements called learning delivery, learning interactivity and learning assessment. To this effect, it may be safe to conclude that the existing technologies were not integrated with instructional design elements for these elements are inter-related and the inability to integrate one of the elements might impede the entire system. The effective of the lessons given for learners would be under question if the technologies being applied are not integrated with instructional design elements. The quality of education given for the distance learner would be not of high standard.

4. The study disclosed that all the three forms of student learner support systems namely; individualized learner support system, group-based learner support system and center-based learner support system existed in the colleges/universities. This might help learners a lot in getting information related to their study from whichever convenient form of system. Nevertheless, while the group based learner support system was reported to be limited only to tutorials, the individualized and counseling learner support systems were revealed to be supported only by telephone and face-to-face technologies. Technology related support systems were not indicated to be given in the institutions in the center-based learner support systems for it mainly focused on library and book store services. Neither faxes and emails were used in the individualized learner support and counseling learner support systems nor were setting up computers, downloading soft wares, operating programs, provision of instructional and course based websites there to support the learner support system. Therefore, it can be concluded that the learner support systems in the colleges/universities was not supplemented by modern and emerging technologies which could hasten and improve communications of the learner support system. The possibility that distance learners benefit from the existing learner support systems would highly be lessen.
  
5. It was revealed in the study that the government of Ethiopia did not take a significant step to convince respondents as to whether it took the initiative to support the attempt of the colleges/universities in using technology in the DL system for the majority of the respondents were uncertain about that. A lot has not been done in investing in infrastructures, reviewing policies, funding technology mediated projects, promoting teacher training that uses technology, implementing standards of quality and networking educational institutions. The fact that the universities/colleges function without a technology plan is a good indication of the lack of this control and taking initiative of the government. Hence it would be safe to conclude that the government took a minimal initiative to promote technology-assisted distance learning. The sole effort from the colleges/universities might not effectively promote the application of technology in the DL system of the country.

6. Knowing problems that hinder effective application of technology in distance learning system is very important. It helps in being proactive and taking actions ahead of time before they happen. Consequently, the major problems in promoting technology assisted DL system were disclosed to be access to computers and the internet, scarce financial resources, attitude of learners towards technology, lack of infrastructure in the country, lack of trained human resources and technological capability. It can, therefore, be concluded that the universities/colleges faced many constraints that refrained them from introducing new technologies in their DL system. Problems usually result in a frustration if not handled technically. The problems faced by the colleges/universities may be possible reasons for seeing back and possibly stop using technologies in the DL system.
  
7. The attitude of the academic staff towards both technologies in general and applying technology in the DL system was revealed to be positive. This could help the institutions in introducing newer technologies as and when ready to do so without major resistance from these groups. The probability of using the technologies in plan in the DL system and maximizing their benefits would also be high. The study could not, however, depict any direction as to what the attitude of learners towards technology was except revealing their uncertainty. It could still be said that this stand of the learners was not a good indication for the institutions to go ahead and apply technologies in the DL system. There might be a good possibility that chosen/applied technologies be rejected and a serious problem is encountered.

### **5.3 Recommendations**

On the basis of the findings obtained and the conclusions reached, the following suggestions are forwarded:

1. As observed in the study, the colleges/universities are merely found in the first generation of technology application, which is print dominated system. The sole application of print technology may not provide the colleges/universities with quality

education system empowered with speed and flexibility. The DL program is believed to be most effective when ranges of technologies from the first generation to the fifth generation are used to supplement instructions. Therefore, it is suggested that the colleges/universities make a thorough analysis to investigate which other technologies could be used to maximize the benefits that new technologies render. This could be done by first studying the accessibility of the technologies to the learners and then investing in some technologies which could facilitate the teaching learning process and the learner support system and increase access to computers, internet and avoid scarcity of finances in the institutions when the need arises which ultimately increases the technological capability. The colleges/universities could send teams to different countries which have done a lot to get experience on which technologies to use in the DL system.

2. The study disclosed that some of the factors worth considering in selecting a technology in plan to be used in the DL program were missing. It is evident that there is no one best form of technology that an institution selects to employ in the DL program. It, however, is appropriate to check on different variables in selecting technologies before using them. Hence, practical measures need to be taken in considering factors related to novelty, user friendliness, teaching learning process, interactivity and speed of technologies to be used. This could be done in two ways. One way of doing this is to form an interdisciplinary team which takes time and puts some effort to make studies over the technologies in plan. The team could investigate whether a technology in plan is feasible for application or not. Then the agreed upon study would be presented to the concerned officials and the selection is done. Other way of solving the problem could be developing a technology related policy that includes the need for developing factor checking in selecting technologies.
3. The effort of integrating technologies being used with elements of instructional design needs to be made for all the instructional design elements and not only for learning objectives and contents. It is apparent that the instructional design elements go hand in

hand with a problem in one of the elements resulting in an overall failure. It is, therefore, recommended that the colleges/universities take time in working towards the integration of technologies being applied and to be applied with instructional technology elements. This could be managed by a collaboration effort of the different stakeholders of the DL program with an initiation from the universities/colleges. The institutions could have IT specialists, instructional design experts, training professionals, tutors and students involved in the DL material preparation so that these all could work towards integrating technologies with the instructional design elements.

4. The sole effort of the universities/colleges to promote the use of technologies in the DL system may not be enough. The government has to take some initiatives in supporting the colleges/universities in their endeavor. The study, however, disclosed that this was not done by the government. It is recommended that the government takes some initiatives to support the effort of the universities/colleges in advancing the application of technology. This could be done by reviewing policies related to technology, funding technology mediated projects, promoting teacher training that uses technology, investing on infrastructures necessary for technology application like telecommunications, electricity and road, implementing standards of quality, sending a team to countries that have excelled in the use of technologies in the DL system and networking educational institutions.
5. The study revealed that the colleges/universities faced different problems. These problems might hamper the effort to introduce technology in DL and result in a frustration. It, therefore, requires the colleges/universities and the government to proactively take some actions to overcome these problems. To alleviate the problems the colleges/universities should attempt to hire teachers trained with some technology backgrounds either from within the country or expatriates. They should also arrange continuous awareness programs for learners in order to shift their negative attitudes towards technology into a positive one. The government could also promote the

application of technology in lower level studies (high schools, junior schools) so that learners develop positive attitudes towards technology.

Finally the student researcher recommends that a more detailed and comprehensive investigation in the same area are made so as to further strengthen the findings of this study. Because, the main task in this small survey is not to conclude rather it is a mere attempt to explore.

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# APPENDICES

## APPENDIX I

ADDIS ABABA UNIVERSITY  
SCHOOL OF GRAGUATE STUDIES  
COLLEGE OF EDUCATION  
DEPARTMENT OF EDUCATIONAL PLANNING AND MANAGEMENT  
[Human Resource and Organizational Development]

QUESTIONNAIRE TO BE FILLED BY DEANS, TUTORS, COORDINATORS, STUDENTS AND EXPERTS

Dear Respondent,

A sound application of technology in distance learning is believed to be inevitable. A lot, particularly in developed countries, has been done in effectively using emerging technologies in the program to maximize the teaching learning at a distance.

The purpose of this questionnaire is to get pertinent information about the problems and practices of technological interventions in distance learning in colleges/universities of Addis Ababa. Your genuine response and cooperation is indispensable to the success of the study for you represent many other distance learning officials with similar experience to whom this questionnaire couldn't be distributed. Please be assured that the researcher will treat your responses confidentially and will not use them for any purpose other than this research.

The researcher would like to thank you, in advance, for your invaluable cooperation and genuine responses.

**General Directions:**

1. Don't write your name in any of the pages.
2. Don't hesitate to go through all the questions.
3. Put a "✓" mark in the boxes that best describes your response and write (if any) on the blank spaces for items specified by "If other, please specify".

Sincerely,  
Hibret Asegid

**PART ONE  
PERSONAL DATA**

Please indicate your choice by marking "✓" in the box and/or writing in the space provided.

**1. Name of your college/university**

- |  |  |
|--|--|
| <input type="checkbox"/> Unity University                    | <input type="checkbox"/> Civil Service College           |
| <input type="checkbox"/> Alpha University College            | <input type="checkbox"/> Saint Mary's University College |
| <input type="checkbox"/> PESC Information Technology College |  |

**2. Sex**

- |                               |                                 |
|-------------------------------|---------------------------------|
| <input type="checkbox"/> Male | <input type="checkbox"/> Female |
|-------------------------------|---------------------------------|

**3. Age**

- |   |                                   |
|---|-----------------------------------|
| <input type="checkbox"/> 25 years and below | <input type="checkbox"/> 46 – 55  |
| <input type="checkbox"/> 26 – 35            | <input type="checkbox"/> Above 55 |
| <input type="checkbox"/> 36 – 45            |                                   |

**4. Academic Qualification**

- |   |                                 |
|---|---------------------------------|
| <input type="checkbox"/> High School Graduate | <input type="checkbox"/> MA/MSc |
| <input type="checkbox"/> College Diploma      | <input type="checkbox"/> PhD    |
| <input type="checkbox"/> BA/BSc               | If others, Please Specify _____ |

**5. Field of Specialization**

- |   |  |
|---|--|
| <input type="checkbox"/> Language               | <input type="checkbox"/> ICT/Computer    |
| <input type="checkbox"/> Business and Economics | <input type="checkbox"/> Natural Science |
| <input type="checkbox"/> Social Science         | <input type="checkbox"/> Technology      |
| If others, Please Specify _____                 |  |

**6. Work Experience**

- |  |   |
|--|---|
| a) In the college/university               |   |
| <input type="checkbox"/> 5 years and below | <input type="checkbox"/> 11 – 15 years      |
| <input type="checkbox"/> 6 – 10 years      | <input type="checkbox"/> 16 years and above |
| b) Total Service Years                     |   |
| <input type="checkbox"/> 5 years and below | <input type="checkbox"/> 11 – 15 years      |
| <input type="checkbox"/> 6 – 10 years      | <input type="checkbox"/> 16 years and above |

**7. Current Position in the College/University**

- |  |   |
|--|---|
| <input type="checkbox"/> Dean                | <input type="checkbox"/> Expert           |
| <input type="checkbox"/> Assistant Dean      | <input type="checkbox"/> Tutor/Instructor |
| <input type="checkbox"/> Coordinator         | <input type="checkbox"/> IT Specialist    |
| <input type="checkbox"/> Administrative Dean | If other, Please Specify _____            |

**8. Monthly Salary**

- |  |                                      |
|--|--------------------------------------|
| <input type="checkbox"/> Less than 500 | <input type="checkbox"/> 1501 – 2000 |
| <input type="checkbox"/> 501 – 1000    | <input type="checkbox"/> 2001 – 2500 |
| <input type="checkbox"/> 1001 – 1500   | <input type="checkbox"/> Above 2501  |

**PART TWO  
INSTRUCTIONAL DESIGN FOR DISTANCE LEARNING**

**I. Technology Assisted Learning Objectives**

1. Please rate the extent to which you feel the following principles of learning objectives are applicable in the distance learning program of your college/university. ( SA = Strongly Agree, A = Agree, U = Undecided, D = Disagree and SD = Strongly Disagree )

Distance Learning Objective Items		SA	A	U	D	SD
1	Learning objectives are defined as part of the instructional design plan.					
2	Learning objectives are explicitly communicated to the distance learner.					
3	Specific instructional activities are directed toward providing distance learners with the necessary					
	a) skills to meet the objectives of the course.					
	b) knowledge to meet the objectives of the course.					
	c) experience to meet the objectives of the course.					
4	Learning objectives for distance education learners are related to real life experiences through example/application.					
5	Learning objectives are designed to accommodate differences in learning styles/life experiences of the distance learner.					
6	The learning objectives are stated in measurable terms so that the distance learner understands what he/she is accountable for.					
7	The learning objectives contain:					
	a) actions for performance					
	b) conditions for performance					
	c) criteria for performance					
8	The learning objectives are sequenced appropriately for the tasks/content.					
9	The media/delivery systems are used in ways that facilitate the achievement of intended learning objectives.					
10	Evaluation of performance is directed toward the measurement/assessment of the defined learning objectives.					
Others, please specify _____						

## II. Technology Assisted Distance Course Contents

2. Please rate the extent to which you feel are the following principles of learning contents are applicable in the distance learning program of your college/university. ( SA = Strongly Agree, A = Agree, U = Undecided, D = Disagree and SD = Strongly Disagree )

Distance Learning Content Items		SA	A	U	D	SD
1	Contents identify the skills that the distance learners need to acquire/master to perform the task(s).					
2	Contents include the changes in attitude/behavior that is required in the side of the distance learner.					
3	Areas that need to be covered are well addressed in the content analysis.					
4	Contents follow most effective sequence to help distance learners understand the information in:					
	a) hierarchical order					
	b) functional order					
	c) general to specific order					
	d) specific to general order					
5	Contents include domain of instruction geared to:					
	a) cognitive domain (knowledge, comprehension, application, synthesis, analysis, evaluation)					
	b) psychomotor domain (motor skills, manipulation of objects)					
	c) affective domain (attaining, responding, valuing, organizing)					
6	Contents are designed in such a way that varied ranges of delivery systems are used.					
7	Contents are designed in such a way that frequent/consistent feedbacks are given.					
Others, please specify _____						

## III. Technology Assisted Delivery

3. Please rate the extent to which you feel the following principles of learning delivery are applicable in the distance learning program of your college/university. ( SA = Strongly Agree, A = Agree, U = Undecided, D = Disagree and SD = Strongly Disagree )

Distance Learning Delivery Items		SA	A	U	D	SD
1	An in-depth analysis has been done to explore the options available to support instruction.					
2	The selection and use of instructional media/tools is based upon their ability to support the predetermined learning objectives of the distance learning program.					
3	The selection of instructional media/tools is influenced by their accessibility by distance learners.					
4	The course incorporates a variety of instructional media.					
5	Course activities are well matched to the chosen instructional media.					
6	Course assessments are well matched to the chosen instructional media.					
7	Users of a distance learning system are adequately prepared in order to maximize the capabilities of instructional media/tools.					
8	Users of a distance learning system are adequately supported in order to maximize the capabilities of instructional media/tools.					

## II. Technology Assisted Distance Course Contents

2. Please rate the extent to which you feel are the following principles of learning contents are applicable in the distance learning program of your college/university. ( SA = Strongly Agree, A = Agree, U = Undecided, D = Disagree and SD = Strongly Disagree )

Distance Learning Content Items		SA	A	U	D	SD
1	Contents identify the skills that the distance learners need to acquire/master to perform the task(s).					
2	Contents include the changes in attitude/behavior that is required in the side of the distance learner.					
3	Areas that need to be covered are well addressed in the content analysis.					
4	Contents follow most effective sequence to help distance learners understand the information in:					
	a) hierarchical order					
	b) functional order					
	c) general to specific order					
	d) specific to general order					
5	Contents include domain of instruction geared to:					
	a) cognitive domain (knowledge, comprehension, application, synthesis, analysis, evaluation)					
	b) psychomotor domain (motor skills, manipulation of objects)					
6	c) affective domain (attaining, responding, valuing, organizing)					
	Contents are designed in such a way that varied ranges of delivery systems are used.					
7	Contents are designed in such a way that frequent/consistent feedbacks are given.					
Others, please specify _____						

## III. Technology Assisted Delivery

3. Please rate the extent to which you feel the following principles of learning delivery are applicable in the distance learning program of your college/university. ( SA = Strongly Agree, A = Agree, U = Undecided, D = Disagree and SD = Strongly Disagree )

Distance Learning Delivery Items		SA	A	U	D	SD
1	An in-depth analysis has been done to explore the options available to support instruction.					
2	The selection and use of instructional media/tools is based upon their ability to support the predetermined learning objectives of the distance learning program.					
3	The selection of instructional media/tools is influenced by their accessibility by distance learners.					
4	The course incorporates a variety of instructional media.					
5	Course activities are well matched to the chosen instructional media.					
6	Course assessments are well matched to the chosen instructional media.					
7	Users of a distance learning system are adequately prepared in order to maximize the capabilities of instructional media/tools.					
8	Users of a distance learning system are adequately supported in order to maximize the capabilities of instructional media/tools.					

CONTINUED		SA	A	U	D	SD
9	The design of programs delivered via distance education reflects the diversity of potential distance learners.					
10	Contingency strategies are planned to provide a quick recovery from technology-related interruptions when the instructional design model relies on electronic technology for delivery.					
11	Advantages of each delivery system are thoroughly analyzed before it is used for instruction.					
12	Disadvantages of each delivery system are thoroughly analyzed before it is used for instruction.					
13	The technology used does not dominate but facilitates the teaching learning activity.					
14	The impacts of distance learner characteristics of the following type on the delivery of instruction are taken into account.					
	a) demographics of the distance learners					
	1) gender					
	2) sex					
	3) ethnicity					
	b) the size of the distance learner group					
	c) geographical location of the distance learners					
	d) strengths/limitations of the distance learners					
	e) learning style preferences of the distance learning group					
	f) others, please specify _____					
	Others, Please specify _____					

#### IV. Interaction in Technology Assisted Learning

4. Please rate the extent to which you feel the following principles of learning interactions are applicable in the distance learning program of your college/university. ( SA = Strongly Agree, A = Agree, U = Undecided, D = Disagree and SD = Strongly Disagree )

Distance Learning Interaction Items		SA	A	U	D	SD
1	Activities require distance learners to be active participants in the learning process expressed by:					
	a) Learner – learner interaction					
	b) Learner-college/university interaction					
	c) Learner-content interaction					
	d) Learner-tutor interaction					
2	There is a balance between formal and informal interaction within the distance learning environment.					
3	Distance learners are provided, in advance, with a list of the technologies they will be required to use for the distance course.					
4	Distance learners are provided, in advance, with an explanation of the technologies they will be required to use for the distance course.					
5	Distance learners are provided with the opportunity to practice using the technologies that they will be required to use for the distance course.					

CONTINUED		SA	A	U	D	SD
6	Instructions that support collaborative/cooperative learning by encouraging the following are designed					
	a) positive interdependence (group projects)					
	b) individual accountability					
	c) appropriate interpersonal skills					
	d) group self-evaluation					
7	Regular contact schedule with distance learners is established.					
8	The regular contact schedule with distance learners is maintained.					
Others, please specify _____						

### V. Technology Assisted Assessment

5. Please rate the extent to which you feel the following principles of learning assessments are applicable in the distance learning program of your college/university. ( SA = Strongly Agree, A = Agree, U = Undecided, D = Disagree and SD = Strongly Disagree )

Distance Learning Assessment Items		SA	A	U	D	SD
1	Assessment instruments/activities are congruent with the learning objectives set throughout a distance education program or course.					
2	Assessment instruments/activities are congruent with the learning skills required of the distance learner throughout a distance education program or course.					
3	Distance learners are provided with varied methods for assessing their progress in the course.					
4	Methods of assessment that provide guided support to distance learners for evaluating their progress in the course are created.					
5	Assessment/measurement strategies that utilize resources local to the distance learner are usually applicable.					
6	Course assessments make use of a variety of technologies.					
7	There are proper safeguards for protecting assessment instrument.					
8	Assessment instruments/examination items are checked regularly for internal validity.					
9	Assessment instruments/examination items are checked regularly for reliability.					
10	Assessments are given to improve distance learners' ongoing learning (formative assessment).					
11	Assessments are given to report on what distance learners have already achieved (summative assessment).					
Others, please specify _____						

**PART THREE**  
**I. GENERATIONS OF TECHNOLOGY**

6. Which of the following technologies does your college/university use? Please indicate the frequency they are being used in your college/university?

<b>Technology</b>	<b>Always</b>	<b>Mostly</b>	<b>Sometimes</b>	<b>Rarely</b>	<b>Never</b>
a) Printed materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Radio broadcasting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Audio cassettes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Video tapes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Television	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Audio-conferencing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Video-conferencing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Electronic Mail (E-mail)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Computer Conferencing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) CD-ROM	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) World-Wide-Web (WWW)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Others, specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. If your rating to #6a) is either 'Occasionally', or 'Sometimes' or 'Always', which of the following types of printed materials does your college/university use? Please indicate the frequency they are being used in your college/university?

<b>Print Type</b>	<b>Always</b>	<b>Mostly</b>	<b>Sometimes</b>	<b>Rarely</b>	<b>Never</b>
a) Courseware leaflets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Text books	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Written Assignments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Study guides	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Self study materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Journals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Articles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Reference books	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Others, specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. If your rating to #6b,c,d ) is either 'Occasionally', or 'Sometimes' or 'Always', for which of the following purposes are the technologies being used in your college/university?

<b>Purpose</b>	<b>Always</b>	<b>Mostly</b>	<b>Sometimes</b>	<b>Rarely</b>	<b>Never</b>
a) documentaries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) archive materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) discussions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) News bulletins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Speeches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Others, Specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**PART THREE**  
**II. FACTORS IN CHOOSING TECHNOLOGY**

9. Below are some of the factors to be taken into account before using any of the technologies stated in part I in DL. Please rate your opinion to indicate the level to which your college/university uses each. (SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree and SA = Strongly Agree)

Factors	5 SA	4 A	3 U	2 D	1 SD
<b>The college/university have considered</b>					
a) The opportunities that exist in the external environment like					
1) Working government policy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Students being mentally prepared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Students' positive attitude	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Availability of materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Reasonable cost of technology materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Availability of funds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) The threats that exist in the external environment like					
1) Poor infrastructure in the country	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Negative attitude of students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) High cost of technology materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Lack of support from the government	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) The internal organizational barriers to be removed before the technology can be used					
1) Negative attitude of tutors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Negative attitude of administrative staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Knowledge/skill of tutors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Knowledge/skill of administrative staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Lack of working technology plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Inadequate financial support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Poor supply of facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) The internal organizational requirements like:					
1) Commitment of the management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Proper resource availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Readiness for change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Others, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**PART THREE**  
**II. FACTORS IN CHOOSING TECHNOLOGY**

9. Below are some of the factors to be taken into account before using any of the technologies stated in part I in DL. Please rate your opinion to indicate the level to which your college/university uses each. (SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree and SA = Strongly Agree)

Factors	5 SA	4 A	3 U	2 D	1 SD
<b>The college/university have considered</b>					
a) The opportunities that exist in the external environment like					
1) Working government policy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Students being mentally prepared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Students' positive attitude	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Availability of materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Reasonable cost of technology materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Availability of funds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) The threats that exist in the external environment like					
1) Poor infrastructure in the country	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Negative attitude of students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) High cost of technology materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Lack of support from the government	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) The internal organizational barriers to be removed before the technology can be used					
1) Negative attitude of tutors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Negative attitude of administrative staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Knowledge/skill of tutors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Knowledge/skill of administrative staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Lack of working technology plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Inadequate financial support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Poor supply of facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) The internal organizational requirements like:					
1) Commitment of the management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Proper resource availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Readiness for change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Others, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**PART THREE**  
**II. FACTORS IN CHOOSING TECHNOLOGY**

9. Below are some of the factors to be taken into account before using any of the technologies stated in part I in DL. Please rate your opinion to indicate the level to which your college/university uses each. (SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree and SA = Strongly Agree)

Factors	5 SA	4 A	3 U	2 D	1 SD
<b>The college/university have considered</b>					
a) The opportunities that exist in the external environment like					
1) Working government policy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Students being mentally prepared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Students' positive attitude	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Availability of materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Reasonable cost of technology materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Availability of funds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____					
b) The threats that exist in the external environment like					
1) Poor infrastructure in the country	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Negative attitude of students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) High cost of technology materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Lack of support from the government	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____					
c) The internal organizational barriers to be removed before the technology can be used					
1) Negative attitude of tutors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Negative attitude of administrative staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Knowledge/skill of tutors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Knowledge/skill of administrative staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Lack of working technology plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Inadequate financial support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Poor supply of facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____					
d) The internal organizational requirements like:					
1) Commitment of the management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Proper resource availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Readiness for change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Others, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____					

	SA	A	U	D	SD
e) The accessibility/availability of technology to					
1) Learners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Tutors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Administrative staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Support staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) The location where the technology is available					
1) Home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Local center	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Local public educational institution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Work place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Other please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) The cost structure of the technology: cost for					
1) Administrative equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Instructional equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Support system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Administrative professional development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Instruction related professional development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Dedicated technology personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Cost per learner to be considered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Learning needs to be developed for the particular technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Instructional strategies to be developed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Kind of instruction the technology enables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Ease of the technology (user friendliness)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m) Novelty of the technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n) Duration courses can be mounted with the technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o) Duration the course material can be changed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p) Possibility that the learning objectives dictating certain media	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q) Convenience of the technology to learners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
r) Pressure from the organization to use/avoid the technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
s) Conformability of the technology to the distance instructor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
t) Other, specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	SA	A	U	D	SD
e) The accessibility/availability of technology to					
1) Learners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Tutors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Administrative staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Support staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) The location where the technology is available					
1) Home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Local center	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Local public educational institution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Work place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Other please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) The cost structure of the technology: cost for					
1) Administrative equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Instructional equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Support system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Administrative professional development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Instruction related professional development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Dedicated technology personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Cost per learner to be considered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Learning needs to be developed for the particular technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Instructional strategies to be developed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Kind of instruction the technology enables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Ease of the technology (user friendliness)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m) Novelty of the technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n) Duration courses can be mounted with the technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o) Duration the course material can be changed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p) Possibility that the learning objectives dictating certain media	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q) Convenience of the technology to learners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
r) Pressure from the organization to use/avoid the technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
s) Conformability of the technology to the distance instructor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
t) Other, specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	SA	A	U	D	SD
e) The accessibility/availability of technology to					
1) Learners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Tutors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Administrative staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Support staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) The location where the technology is available					
1) Home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Local center	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Local public educational institution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Work place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Other please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) The cost structure of the technology: cost for					
1) Administrative equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Instructional equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Support system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Administrative professional development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Instruction related professional development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Dedicated technology personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Cost per learner to be considered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Learning needs to be developed for the particular technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Instructional strategies to be developed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Kind of instruction the technology enables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Ease of the technology (user friendliness)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m) Novelty of the technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n) Duration courses can be mounted with the technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o) Duration the course material can be changed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p) Possibility that the learning objectives dictating certain media	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q) Convenience of the technology to learners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
r) Pressure from the organization to use/avoid the technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
s) Conformability of the technology to the distance instructor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
t) Other, specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**PART THREE**  
**III. PROBLEMS ENCOUNTERED/BARRIERS**

10. Which of the following variables are constraining the use of technology in your college/university? Please indicate the extent to which you feel each variable is a barrier (problem), ticking one box in each row. (LR = Large, SLR = Somewhat Large, M = Moderate, LS = Less and VLS = Very Less)

Barriers	5 LR	4 SLR	3 M	2 LS	1 VLS
a) Lack of access to					
1) Computers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Tape recorder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Television	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Telephone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Other, please specify _____ _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Sustainability in the use of the technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Scarce financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) The attitude towards technology of					
1) Learners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Tutors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Administrators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Lack of infrastructure					
1) Technology training centers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Band width of connectivity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Electricity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Transportation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Service centers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Other, please specify _____ _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) A tendency to be engaged in technology-centered approach	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Lack of technological capability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Lack of trained human resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Dependence on donors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Poor supply of facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Students' poor background knowledge on technologies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Large number of students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m) Lack of support from the government	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n) Inadequacy of time to practice the technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o) Inability to integrate the technology with					
1) The curriculum material	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Teaching activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	LR	SLR	M	LS	VLS
3) Content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Objective	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p) Teachers feeling of uncomfortable in using technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q) Other, specify _____ _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**PART THREE**  
**IV. COLLEGE/UNIVERSITY TECHNOLOGY CAPABILITY**

11. Has your college/university formed an interdisciplinary team (diverse content expertise)?

Yes

No

I don't know

12. If your response to #11 is 'Yes', does the team include members from the following functions/branches?

Functions	Yes	No	I don't know
a) Executive branch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Instructional design	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Information Technology (IT)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Net work systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Broadcasting Communication	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Training or professional consulting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Other, please specify _____ _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. To what extent does your college/university place emphasis in preparing a technology plan?

Large

Somewhat Large

Moderate

Less

Very Less

14. If your response to #13 is 'Large' or 'Somewhat Large', please indicate the extent to which emphasis is given for the following components in the technology plan of your college/university.

Component of Technology Plan	3 Major	2 Minor	1 None
a) Review of technology status (needs assessment) of:			
1) Students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Instructors/tutors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Existing technological options	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Internal strengths	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Internal weaknesses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Major	Minor	None
6) External opportunities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) External threats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Vision/goal statements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Equity issues			
1) To students as customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Provision of contents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) To instructors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Instructional uses of technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Student technology standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Staff technology standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Integration in to core curriculum to the:			
1) Content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Learning objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Learning outcomes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Learning design	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Learning assessments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Pilot Program and action research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Management uses of technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Student information systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Infrastructure/support for infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Long range goals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m) Maintenance and replacement cycle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n) Budget projections and funding sources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o) Staff training programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p) Benchmarking standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q) Quality control components	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
r) Security planning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
s) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. If your response to #13 is, 'Large' or 'Somewhat Large', to what extent is the plan being implemented?

- Very Large     
 Large     
 Moderate     
 Less     
 Very Less

16. To what extent does the technology plan implementation give emphasis to the following important aspects of implementation? (LR = Large, SLR = Somewhat Large, M = Moderate, LS = Less and VLS = Very Less)

Implementation Aspects	5 LR	4 SLR	3 M	2 LS	1 VLS
a) Timelines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Benchmarks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Other, please specify _____ _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. Which of the following have been done in the implementation phase? Please indicate the level to which each was considered?

Actions Taken	3 Major	2 Minor	1 None
a) Purchasing equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Installation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Training for			
1) Tutors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Administrators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Support staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Learners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Evaluating each new technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Other, please specify _____ _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. If your response to #13 is 'Large' or 'Somewhat Large' to what extent is the plan being evaluated?

- Large     
  Somewhat Large     
  Moderate     
  Less     
  Very Less

19. If your response to #13 contains 'Large' or 'Somewhat Large', to what extent does the evaluation give emphasis to the following? (LR = Large, SLR = Somewhat Large, M = Moderate, LS = Less and VLS = Very Less)

Evaluation Aspects	5 LR	4 SLR	3 M	2 LS	1 VLS
a) Plan's process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Plan's impact	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Other, please specify _____ _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. Which means of obtaining measures used to determine process are used in the evaluation? Please indicate the extent to which they are used.

Measures Used to Determine	5 Always	4 Sometimes	3 Occasionally	2 Rarely	1 Never
a) Customer feedback	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Plan audit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Focus groups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Surveys	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	SA	A	U	D	SD
e) The accessibility/availability of technology to					
1) Learners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Tutors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Administrative staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Support staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) The location where the technology is available					
1) Home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Local center	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Local public educational institution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Work place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Other please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) The cost structure of the technology: cost for					
1) Administrative equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Instructional equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Support system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Administrative professional development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Instruction related professional development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Dedicated technology personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Cost per learner to be considered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Learning needs to be developed for the particular technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Instructional strategies to be developed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Kind of instruction the technology enables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Ease of the technology (user friendliness)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m) Novelty of the technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n) Duration courses can be mounted with the technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o) Duration the course material can be changed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p) Possibility that the learning objectives dictating certain media	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q) Convenience of the technology to learners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
r) Pressure from the organization to use/avoid the technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
s) Conformability of the technology to the distance instructor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
t) Other, specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**PART THREE**  
**III. PROBLEMS ENCOUNTERED/BARRIERS**

10. Which of the following variables are constraining the use of technology in your college/university? Please indicate the extent to which you feel each variable is a barrier (problem), ticking one box in each row. (LR = Large, SLR = Somewhat Large, M = Moderate, LS = Less and VLS = Very Less)

Barriers	5 LR	4 SLR	3 M	2 LS	1 VLS
a) Lack of access to					
1) Computers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Tape recorder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Television	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Telephone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____					
b) Sustainability in the use of the technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Scarce financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) The attitude towards technology of					
1) Learners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Tutors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Administrators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Lack of infrastructure					
1) Technology training centers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Band width of connectivity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Electricity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Transportation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Service centers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____					
f) A tendency to be engaged in technology-centered approach	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Lack of technological capability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Lack of trained human resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Dependence on donors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Poor supply of facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Students' poor background knowledge on technologies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Large number of students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m) Lack of support from the government	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n) Inadequacy of time to practice the technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o) Inability to integrate the technology with					
1) The curriculum material	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Teaching activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	LR	SLR	M	LS	VLS
3) Content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Objective	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p) Teachers feeling of uncomfortable in using technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q) Other, specify _____ _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**PART THREE**  
**IV. COLLEGE/UNIVERSITY TECHNOLOGY CAPABILITY**

11. Has your college/university formed an interdisciplinary team (diverse content expertise)?

Yes

No

I don't know

12. If your response to #11 is 'Yes', does the team include members from the following functions/branches?

**Functions**

- a) Executive branch
- b) Instructional design
- c) Information Technology (IT)
- d) Net work systems
- e) Broadcasting Communication
- f) Training or professional consulting
- g) Other, please specify \_\_\_\_\_  
\_\_\_\_\_

**Yes**

**No**

**I don't know**

13. To what extent does your college/university place emphasis in preparing a technology plan?

Large

Somewhat Large

Moderate

Less

Very Less

14. If your response to #13 is 'Large' or 'Somewhat Large', please indicate the extent to which emphasis is given for the following components in the technology plan of your college/university.

**Component of Technology Plan**

a) Review of technology status (needs assessment) of:

- 1) Students
- 2) Instructors/tutors
- 3) Existing technological options
- 4) Internal strengths
- 5) Internal weaknesses

**3  
Major**

**2  
Minor**

**1  
None**

	Major	Minor	None
6) External opportunities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) External threats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Vision/goal statements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Equity issues			
1) To students as customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Provision of contents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) To instructors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Instructional uses of technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Student technology standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Staff technology standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Integration in to core curriculum to the:			
1) Content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Learning objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Learning outcomes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Learning design	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Learning assessments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Pilot Program and action research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Management uses of technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Student information systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Infrastructure/support for infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Long range goals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m) Maintenance and replacement cycle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n) Budget projections and funding sources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o) Staff training programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p) Benchmarking standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q) Quality control components	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
r) Security planning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
s) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____			

15. If your response to #13 is, 'Large' or 'Somewhat Large', to what extent is the plan being implemented?

- Very Large     
 Large     
 Moderate     
 Less     
 Very Less

16. To what extent does the technology plan implementation give emphasis to the following important aspects of implementation? (LR = Large, SLR = Somewhat Large, M = Moderate, LS = Less and VLS = Very Less)

Implementation Aspects	5 LR	4 SLR	3 M	2 LS	1 VLS
a) Timelines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Benchmarks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Other, please specify _____ _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. Which of the following have been done in the implementation phase? Please indicate the level to which each was considered?

Actions Taken	3 Major	2 Minor	1 None
a) Purchasing equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Installation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Training for			
1) Tutors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Administrators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Support staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Learners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Evaluating each new technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Other, please specify _____ _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. If your response to #13 is, 'Large' or 'Somewhat Large' to what extent is the plan being evaluated?

- Large     
  Somewhat Large     
  Moderate     
  Less     
  Very Less

19. If your response to #13 contains "Large" or "Somewhat Large", to what extent does the evaluation give emphasis to the following? (LR = Large, SLR = Somewhat Large, M = Moderate, LS = Less and VLS = Very Less)

Evaluation Aspects	5 LR	4 SLR	3 M	2 LS	1 VLS
a) Plan's process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Plan's impact	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Other, please specify _____ _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. Which means of obtaining measures used to determine process are used in the evaluation? Please indicate the extent to which they are used.

Measures Used to Determine	5 Always	4 Sometimes	3 Occasionally	2 Rarely	1 Never
a) Customer feedback	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Plan audit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Focus groups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Surveys	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21. To what extent does the college/university provide technology related training and/or professional developments?

- Large     
  Somewhat Large     
  Moderate     
  Less     
  Very Less

22. If your response to #21 is 'Very Large', or 'Large', please indicate the extent to which emphasis is given to the types of courses included in the training/professional development program? (LR = Large, SLR = Somewhat Large, M = Moderate, LS = Less and VLS = Very Less)

Type of course	5 LR	4 SLR	3 M	2 LS	1 VLS
a) A connection to student learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Hands on technology use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Variety in learning experiences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Curriculum-specific applications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Collegial approaches to learning					
1) Facilities to learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Guides to learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Active participation of tutors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Technical assistance and support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Built-in evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Continuous funding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Professional development as an ongoing process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Others, specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____					

23. Which of the following achievement does your college/university have in its DL program? Please indicate the extent to which you feel each achievement is a success, ticking one box in each row. (VH = Very High, H = High, S = Satisfactory, P = Poor and VP = Very Poor)

Achievement	5 VH	4 H	3 S	2 P	1 VP
a) Learner-learner interaction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Learner-instructor interaction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Learner motivation as described by:					
1) Hold students' attention	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Preserve students activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Are intrinsically motivating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Make learning fun	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Organizational support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Contribution of the interdisciplinary team	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Hardware and software usability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Access to multiple delivery media	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Organizational cost	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Organizational benefit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Others, specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**PART THREE**  
**V. GOVERNMENT INITIATIVES**

24. Listed below are statements that specify expectations from the government for a sound technology exercise in DL. Please rate your opinion to indicate the level to which the government took initiative, ticking one box in each row. (SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree and SA = Strongly Agree)

Initiative	5 SA	4 A	3 U	2 D	1 SD
The government	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a) Invests in infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Continuously reviews fiscal policy to favor educational use of technologies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Continuously reviews fiscal policy to favor non profit use of technologies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Reorients funding policies to serve students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Funds for technology-mediated projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Funds for projects that ensure access to technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Promotes teacher training that uses technology to familiarize teachers with different tools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Simplifies regulations requirements to facilitate transfer of credits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Simplifies accreditations requirements to facilitate transfer of credits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Implements standards of quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Networks educational institutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Other, specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**PART FOUR**  
**DISTANCE LEARNER SUPPORT**

25. Does your college/university provide individualized tutor support in response to students' queries?

Yes

No

26. If your answer to #25 is 'Yes', the individualized support system is provided by making use of (please indicate the those which work)

Telephone

Mail

Email

Faxes

Face to face meeting

Others, please specify \_\_\_\_\_

27. How often is the individual tutor and student communication made?

- A week  
 A semester  
 A month  
 With an agreement between learner and tutor

28. What form of group-based tutor support system is there in your college/university? (Please indicate those which work)

- Tutorials  
 Audio conferencing  
 Peer group support  
 Others, please specify \_\_\_\_\_

29. If your response to #28 includes tutorials, indicate the extent to which emphasis is given to the following purposes of tutorials.

Purpose	3 Major	2 Minor	1 None
a) Introducing students in broad terms the course contents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Responding to problems being experienced by students as a whole	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Helping illuminate issues through group discussions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Facilitating project work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Others, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

30. Does your college/university provide counseling service to learners?

- Yes  
 No

31. If your response to #30 is 'Yes', how is the service given?

- Telephone  
 Mail  
 Email  
 Faxes  
 Face to face meeting  
 Others, please specify \_\_\_\_\_

32. How do you evaluate each of the following in the counseling service? (E = Excellent, VG = Very Good, G = Good, P = Poor and VP = Very Poor)

Elements	5 E	4 VG	3 G	2 P	1 VP
a) Openness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Friendliness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Approachability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>





**PART FIVE  
ATTITUDE TOWARDS TECHNOLOGY  
I GENERAL**

37. Please read each statement and then use a  $\surd$  mark against the box that best shows how you feel. (SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree and SA = Strongly Agree)

No.	Items	SA	A	U	D	SD
1	I enjoy doing my work using technology.					
2	I am tired of using technology.					
3	Working with technologies makes me very nervous.					
4	Learning about technologies is boring to me.					
5	I think working with technology would be enjoyable.					
6	I will be able to get a very good job if I am good in technologies.					
7	I would work harder if I could use technologies more often.					
8	I know that technologies give me opportunities to know many new things.					
9	Technologies are difficult to use.					
10	I get a sinking feeling when I think of trying to use technology.					
11	One can learn from books than from technology innovations like computers.					
12	Working with technologies increases self-confidence.					
13	Technologies isolate people by inhibiting normal social interaction among users.					
14	Using technologies saves me some time.					
15	Using technologies saves me some work.					
16	I will do as little work with technologies as possible.					
17	I think that it takes a long time to finish work when I use a technology.					
18	Using technologies does not scare me at all.					
19	Using a technology is very frustrating.					
20	I believe that it is very important for me to learn how to use a technology.					
21	Knowing how to use technology is a worthwhile skill.					
22	I do not understand how some people can spend so much time working with technology outputs and seem to enjoy.					
23	Figuring out technology problems does not appeal to me.					
24	I have a lot of self-confidence when it comes to working with technologies.					
25	I do not think of any way that I will use technologies in my career.					



