

**“TRENDS OF ICT INTEGRATION INTO UNIVERSITY
CURRICULUM: FACULTY OF ARTS, UNIVERSITY OF DHAKA”**

**THIS THESIS SUBMITTED TO THE UNIVERSITY OF DHAKA AS A PARTIAL
FULFILLMENT FOR THE DEGREE OF MASTER OF ARTS IN DEPARTMENT OF
INFORMATION SCIENCE AND LIBRARY MANAGEMENT**

**DEPARTMENT OF INFORMATION SCIENCE AND LIBRARY MANAGEMENT
UNIVERSITY OF DHAKA
DHAKA-1000, BANGLADESH**

**“Trends of ICT Integration into University Curriculum: Faculty of Arts,
University of Dhaka”**

**This Thesis Submitted to the University of Dhaka as a Partial Fulfillment for the
Degree of Master of Arts in Department of Information Science
and Library Management**

Submitted By

Registration No. 4220

Session: 2011-2012

Exam Roll No. 3052

Department of Information Science and Library Management

University of Dhaka

Dhaka-1000, Bangladesh

2014

**“Trends of ICT Integration into University
Curriculum: Faculty of Arts, University of Dhaka”**

Dedicated to My Parents

PREFACE

The main objective of the thesis “Trends of ICT Integration into University Curriculum: Faculty of Arts, University of Dhaka” is to fulfill the partial requirements for the course MISLM-508 of the Masters Degree in Information Science and Library Management. The researcher believes that every research work is inevitably the result of the collaboration of many great helpers, otherwise continuing alone with a gigantic mass of scattered materials and on the subject and their presentation in a form most coherent and consistent can outbalance the patience of a feeble mind as him. All available papers, relevant documents, journals and some brochures have been minutely scanned through.

The present study has been discussed under six broad chapters. The study discusses the methodology, scope and objectives adopted for collection, presentation and analysis of data for this study. The main concern of the study was to find out the real picture of ICT integration in Arts Faculty of Dhaka University. It also attempts to find out the growth and development functions of ICT adoption for educational system of the Arts Faculty.

The findings and recommendations from the study should hopefully lead to a clarification of many problems in the formulation of planning and policy making regarding ICT infusion in teaching. The researcher believes that it would help the policy makers and concerned authority to develop and implement a suitable system to integrate ICT in the Faculty of Arts.

However, the researcher has made all possible investigations to collect data related to the study in order to give a complete picture. It may be useful as a basic work for future investigators. If the work is found useful to the teachers, students, university authority, effort of the researcher would be successful one.

ACKNOWLEDGEMENTS

At the outset, this researcher would like to express deepest sense of gratitude and heartfelt appreciation to the supervisor, for his continued guidance given throughout the period of the research work. It was due to his able supervision that work is successfully completed to the utmost satisfaction. In short, the present study would not have been completed without his guidance.

The researcher is grateful to all the faculty members of the department of Information Science and Library Management, University of Dhaka, for their expert opinions and continued assistance in the course of the research.

Genuine appreciation to the respondent teachers and students of the university of Dhaka who have spared their valuable time in the collection and furnishing of the valuable data required for the present study.

It would have not been possible for the researcher to reach the present study of academic achievements without the loving support of the parents who did their best for the education. Researcher also feels grateful to his elder sister for her advice, moral support and encouragement in completion the thesis work. The researcher's beloved younger brother also inspired in accomplishment of the present research.

Above all, the researcher remembers the graceful Almighty Allah, who has given the opportunity for the higher study. All praise is due to Allah for his guidance and grace. Peace and blessing be upon our prophet Mohammad.

March 2014

Roll No.3052

CONTENTS

<i>Preface</i>	<i>iv</i>
<i>Acknowledgements</i>	<i>v</i>
<i>Contents</i>	<i>vi-ix</i>
<i>List of Tables</i>	<i>viii</i>
<i>List of Figures</i>	<i>ix</i>
<i>Abbreviations</i>	<i>x</i>

<u>CHAPTERS</u>	<u>CONTENTS</u>	<u>PAGES</u>
Chapter 1	Introduction	1-10
1.1	<i>Introduction</i>	<i>1</i>
1.2	<i>Information Communication Technology(ICT)</i>	<i>1</i>
1.3	<i>ICT Integration</i>	<i>3</i>
1.4	<i>Significance of the Study</i>	<i>4</i>
1.5	<i>Problem of the Statement</i>	<i>5</i>
1.6	<i>Purpose of the Study</i>	<i>6</i>
1.7	<i>Objectives of the Study</i>	<i>6</i>
1.8	<i>Methodology of the Study</i>	<i>6-7</i>
	1.8.1 <i>Research Questions</i>	<i>6</i>
	1.8.2 <i>Data Collection Method</i>	<i>7</i>
1.9	<i>Layout of Chapters</i>	<i>8</i>
Chapter 2	Literature Review	11-19
2.1	<i>Review the Related Literature</i>	<i>11</i>
2.2	<i>Literature on ICT in Higher Education-Experience in Bangladesh</i>	<i>17</i>
Chapter 3	Information Communication Technology and Curriculum	20-44
3.1	<i>Current Status of ICT Related Courses in the Curriculum of Faculty of Arts, University of Dhaka</i>	<i>20</i>
3.2	<i>Integration of ICT into the Curriculum</i>	<i>26</i>
	3.2.1 <i>A Conceptual Framework for ICT Integration in Dhaka University</i>	<i>28</i>
3.3	<i>ICT Curriculum in Arts Faculty of Dhaka University</i>	<i>30</i>
	3.3.1 <i>ICT Curriculum in Arts Faculty of Dhaka University</i>	<i>33</i>

3.4	<i>Teachers' ICT Usage</i>	35
3.4.1	<i>Professional Development of Teacher</i>	36
3.4.2	<i>Teacher Training Courses on ICT Pedagogy</i>	40
	<i>Integration of Arts Faculty, University of Dhaka</i>	
3.4.3	<i>The Role of Teacher training in Facilitating of ICT</i>	40
3.5	<i>ICT Competency Standard for Students</i>	41
Chapter 4	Current Status of ICT: Data Analysis and Interpretation	46-62
4.1	<i>Findings of the Teachers' Interview</i>	46
4.2	<i>Findings of the Students, Interview</i>	53
Chapter 5	Problems and Prospects of Using ICT	63-74
5.1	<i>Barriers to the integration of ICT into Higher Education: Example of Dhaka University</i>	63
5.2	<i>Prospects of ICT in Arts Faculty of Dhaka University</i>	68
Chapter 6	Recommendations and Conclusion	75-84
6.1	<i>Recommendations</i>	75
6.2	<i>Some Suggested ICT Development Models in Higher Education in Dhaka University</i>	79
6.2.1	<i>Models of Technology Integration</i>	79
6.2.1.1	<i>ACOT Stages of Development Model</i>	79
6.2.1.2	<i>Ely's Eight Conditions for Implementing Educational Technology Integrations</i>	81
6.3	<i>Limitations of the Study</i>	82
6.4	<i>Future Course of Work</i>	83
6.5	<i>Conclusion</i>	84

LIST OF TABLES

<u>TABLE NO</u>	<u>NAME OF TABLES</u>	<u>PAGES</u>
3.1	<i>Departments of the Faculty of Arts</i>	21
3.2	<i>ICT related Courses in the Existing Syllabus of the Departments of the Faculty of Arts</i>	22-23
3.3	<i>Status of ICT Infrastructure of Departments of Faculty of Arts</i>	25
3.4	<i>Sample of ICT Curriculum</i>	31-32
3.5	<i>Sample Marks Distribution of ICT</i>	32
3.6	<i>Descriptions of Nine ICT Literacy Units in a Program of Teacher Professional Development</i>	37
3.7	<i>Rationale of Nine ICT Literacy Units in a Program of Teacher Professional Development</i>	38
4.1	<i>Age and Sex of Respondents</i>	46
4.2	<i>Academic Status of Respondents</i>	47
4.3	<i>Technology Used by Teachers</i>	48
4.4	<i>Reasons for not Using ICT</i>	49
4.5	<i>Computer Training Course</i>	50
4.6	<i>Teachers' Opinion about Students and Department</i>	52
4.7	<i>Age sex and Department of Student</i>	53
4.8	<i>Students' Access to ICT</i>	56
4.9	<i>Use of E-mail and Internet</i>	57
4.10	<i>Use Computer and USB Flash</i>	58
4.11	<i>Computer Laboratory in the Department</i>	59

LIST OF FIGERS

<u>FIGURE NO</u>	<u>NAME OF FIGERS</u>	<u>PAGES</u>
<i>1.1</i>	<i>Schematic View of the Study</i>	<i>10</i>
<i>3.1</i>	<i>Model Depicting a Continuum Approach to ICT Development in School</i>	<i>29</i>
<i>3.2</i>	<i>Model of Stages of Teaching and Learning with and Through ICT</i>	<i>33</i>
<i>3.3</i>	<i>ICT Competency Standard for Students</i>	<i>41</i>
<i>4.1</i>	<i>Use of ICT in Teaching</i>	<i>48</i>
<i>4.2</i>	<i>Using ICT Resources</i>	<i>50</i>
<i>4.3</i>	<i>Training Sponsored</i>	<i>51</i>
<i>4.4</i>	<i>Students' Access to ICT</i>	<i>54</i>
<i>4.5</i>	<i>Frequency of Using ICT</i>	<i>55</i>
<i>4.6</i>	<i>Reasons for Limited access to ICT</i>	<i>55</i>
<i>4.7</i>	<i>Students' Access to the Internet in Department</i>	<i>57</i>
<i>4.8</i>	<i>Primary Reasons for Using Computers</i>	<i>60</i>
<i>4.9</i>	<i>Share Computer with Other Students During Lab Classes</i>	<i>61</i>
<i>4.10</i>	<i>Number of Students Sharing a Computer During Lab Classes</i>	<i>62</i>

LIST OF ABBREVIATIONS

ACOT	Apple Classroom of Tomorrow
CMS	Content Management System
FS	Free Software
HEQEP	Higher Education Quality Enhancement Project
ICT	Information and Communication Technology
ICTCI	Information and Communication Technology Curriculum Integration
ISLM	Information Science and Library Management
LDC	Least developed country
LMS	Learning Management System
MOE	Ministry of Education
MRC	Multimedia Resources Centers
GOs	Governmental Organizations
NGOs	Non Governmental Organizations
NICI	National Information and Communication Infrastructure
NICITCI	National Information and Communication Technology Curriculum Integration
UGC	University Grants Commission
UNESCO	United Nations Educational, Scientific and Cultural Organization

CHAPTER 1

INTRODUCTION

CHAPTER 1

INTRODUCTION

1.1 Introduction

In this era of technological advancement, we have witnessed tremendous change in information technology. Now we are an information society, and that has greatly influenced our education. In the educational sector, Information and communication technology (ICT) is shaping the future of education and learning. ICT will largely contribute to achieving universal education through the delivery of education and the training of teachers. ICT offering the improved conditions for lifelong learning. Such lifelong learning involves people that are outside the formal education process, to improve their professional skills.

1.2 Information Communication Technology (ICT)

ICT can improve critical thinking, information handling skills, and problem-solving capacity (Bransford, 2000). Different ICTs help to extend the access to education, strengthen the relevance of education to the digital workspace. ICTs also raise educational quality by helping to make teaching and learning into an active process connected to the real life.

ICT has become one of the basic building blocks of modern society, within a very short time. Many countries now regard understanding ICT and mastering the basic skills and concepts of ICT as part of the core of education.

One of the major trends of educational reform is acquiring and using information technology. The general impression is that integrating technology in learning and teaching is a very valuable asset in the process of learning, appealing to many aspects of students'

learning, and hence, a vital necessity for adoption in education .This impression has been echoed by many scholars and studies.

For example, one of the benchmarks of research studies indicating how technology has benefited the process of education in America in the 1997 nationwide survey of teachers and school superintendents by Jostens Learning Corporation. In the survey, 74% of the general public and 95% of educators indicated that computers had improved the quality of education, teaching, and learning (Earle, 2002). In that regard, nowadays technology integration in education poses as one of the crucial elements in educational endeavors. Thus Governments and institutions strive to adopt and integrate technology in their educational curricula.

Nevertheless, the effectiveness of integrating technology into education has been questioned, and challenges have been pointed out by various scholars. Baron, Orwig, Ivers, and Lilavois (2002) argue that integrating technology into education is not easy because it is still difficult for schools to afford enough resources to meet the demands. Shuldman (2004), states that the most troubling gap is classroom teachers' lack of integration understanding. He says that this is because technology's greatest impact on student learning appears only after teachers have sufficient skills, coupled with an understanding of how various technologies can be used as cognitive tools, and are able to weave technology experiences into their daily practice. The key question is whether the teachers have really integrated technology in learning or not, and if they have, to what extent they have done so; or, if not, what is the essence of the problem of not doing so? it is becoming clear that technology, does not directly change teaching or learning. Rather, the critical element is how technology is incorporated into instruction. questions on the and hence a There is a need for formatively evaluating the nature of technology integration processes in institutions to maximally realized the benefits of technology in education.

1.3 ICT Integration

The focus today is no longer on whether technology should be integrated into the school setting, but on how this integration should be done in a typical school setting. ICT integration in education – or, in other words, the adoption of computer usage – has in recent years become the key term in most national policies (Vallance, 2008).

Several cases of successful ICT integration into the classroom are reported, but most of these have been in technologically advanced countries (Jhurree, 2005). On the contrary, little or no statistics are available from developing countries to ascertain the level of ICT integration into education in these countries.

One of UNESCO's overriding aims is to ensure that all countries, both developed and developing, have access to the best educational facilities. It necessary to prepare young people to play full roles in modern society and to contribute to a knowledge nation. The key components of the Organization's strategy to achieve the Educational goals are maintaining a capacity to advise national governments on the use of technology in schools and, in particular, on the optimal balance, between ICT and older educational technologies and assisting countries in developing educational software and materials that reflect their own national and regional cultures.

In developing countries, the perception of ICT integration in schools still remains the outdated empirical view. The effective integration of ICT is a complex process that involves not just technology, but also a curriculum and a pedagogy, institutional readiness, teacher competencies. (Tinio, 2003) It is a dynamic process involving long term financial and interacting factors over time. To ease the numerous aspects of ICT integration, such as ICT and its uses, teaching the curriculum, some conceptual frameworks and models have been put in place.

In developing countries, successful cases of ICT Integration were based on frameworks, guided by research, and done by means of a scientific approach. Most of these cases were based on careful planning and how policy-makers understood and appreciated the dynamics of such integration.

1.4 Significance of the Study

It was assumed that the departments selected for the study had a basic ICT laboratory in place with at least the minimum of hardware and resources required. The study focuses on how ICT integration in universities can be properly planned; and little emphasis is to be placed on the implementation phase of ICT integration. That could be done in a more contextual study. The result from this study will be of value to principals in universities struggling with the challenge of ICT integration – especially those with little or no knowledge of the possible outcomes.

The significance of this study lies in the fact that the guidelines suggested can have a bearing on how policy-makers and decision-makers view ICT integration. It could even receive a nationwide acceptance, with subsequent adoption, in universities where the need for ICT integration is recognized. If proper guidelines for ICT Integration are suggested, then decision-makers will find it a valuable tool to overcome the setbacks they have so far encountered in strengthening the quality of education through ICT. With no previous integration process being based on research, this study could help stakeholders in universities to clearly identify the areas of concern – many of which were initially ignored.

In that regard, the study will inform the stakeholders (students, academic staff, administrative staff, and technical support service staff) of:

The status of technology availability and accessibility for teaching and learning at the university

- i. The skill level of academic staff members and their assessment of the implementation of technology integration at the Arts faculty of Dhaka University.
- ii. How technology is being used by students and teachers at the faculty of Arts in Dhaka University
- iii. The nature and the effectiveness of professional development programs in technology, and
- iv. How to make technology plans for teaching and learning, using technology.

1.5 Problem of the Statement

ICT integration into university curriculum in the Arts Faculty of University of Dhaka is still at an early stage, and already faces several setbacks. Thus various initiatives undertaken by governments and the private sector to promote the use of computers in departments. Based on literature and other research, this may be attributed to the fact that no guidelines for proper ICT adoption in higher education exist. Most integration cases were done haphazardly with no systematic approach based on existing frameworks or tailored towards the real context in the departments concerned.

This research reviews some existing frameworks for ICT integrations in higher education. The research explores the innovative pathways in order to understand the various approaches in using ICT to improve teaching and learning. Some developing countries have taken to ensure successful integration of ICT into higher education. It then establishes the current status of ICT integration into the university curriculum, of the Arts faculty of university of Dhaka, highlighting the barriers and enablers that hinder or facilitate the integration into the higher education of the Arts Faculty of University of Dhaka; and finally, it proposes – from a close analysis of ICT in selected departments. A set of guidelines and requirements are referred for a successful integration of ICT into the university.

1.6 Purpose of the Study

The core purpose of the study is to describe the ways to integrate ICT into the departmental curriculum of Faculty of Arts, University of Dhaka as well as to identify the problems that hinder the integration process.

1.7 Objectives of the Study

The main object of the study is to find out the present status and integration of ICT into university curriculum of the faculty of Arts, university of Dhaka. The sub-objectives arising out of it are:

- a) To find out the present status and integrate ICT into Dhaka University curriculum.
- b) To identify the constraints faced in ICT implementation.
- c) To determine the perceived positive and negative effects of using ICTs and in the Arts faculty, University of Dhaka.
- d) To point out the recommendation on the basis of recognized problem.

1.8 Methodology of the Study

1.8.1 Research Questions

- i. What are the current trends of ICT integration into university curriculum in the Arts faculty of university of Dhaka?

Three sub-questions related to the main study will be addressed:

- ii. Which guidelines should be followed to ensure a successful integration of ICT in the Arts faculty of Dhaka university?
- iii. What approaches and strategies of integrating technology do teachers and students employ in learning and teaching?
- iv. What factors hinder ICT integration in Arts faculty of Dhaka University?

1.8.2 Data Collection Methods

The methods used for data gathering were a combination of the quantitative and qualitative methods. Data were gathered from three selected sources: interviews with Arts faculty teachers; students' surveys; and finally, from documentation available in the Arts faculty.

Sample: The purposive sampling technique was used in the selection of departments with basic ICT infrastructure as a key criterion. The selection of the departments in the chosen faculty was further influenced by the availability of ICT resources, the faculty readiness to support the research conducted – by granting access to resources and information, and the limited funds available to cover departments in the faculty far apart. Five departments (such as Department of Information Science and Library Management, Department of Urdu, Department of Sanskrit, Department of Pali and Buddhist Studies, Department of Islamic Studies) were short-listed from within the case study. These departments organized their syllabus in terms of ICT integration. A further assessment was then made based on criteria, such as the accessibility and the willingness of leaders to adopt the ICT in education change, as well as to be representative of each of the departments of the Arts faculty.

Interviews: This was the method used for primary data collection. In this research, four components made up the interviews: Interviews with teachers aimed at appraising their willingness to embark on ICT in departments, as well as the institutional policies and challenges that could possibly be faced; interviews with Chairman of Departments, aimed at gaining a better understanding of the challenges and barriers facing ICT integration into departments.

The teachers' interviews were administered in the form of questionnaires – to obtain their opinions and views on the potential challenges and expectations from using ICT in teaching.

Students' interviews – also administered in the form of questionnaires with closed-ended questions – aimed at establishing students' access to and the use of ICT in departments.

A literature review was used to gather secondary data. Data collected by other researchers in some departments were reanalyzed, or simply used, in order to obtain useful insights into the state of ICT literacy in those departments as well as in the related faculty.

1.9 Layout of Chapters

Chapter 1: Introduction

This chapter has highlighted the background significance of the study, and specified the research problems, as well as the objectives, the research questions and the approach used.

Chapter 2: Literature Review

This chapter provides the literature review of readings that are relevant to the study. This chapter will give necessary input to the researcher to design the frame of the research study on the proposed topic. It also reflects a basis for theoretical framework of the study and interpretation of findings of the research.

Chapter 3: Information Communication Technology and Curriculum

This chapter will represent a general overview of the current level of ICT integration into higher education of Arts faculty of university of Dhaka. This chapter will also seek to understand the requirements for an effective ICT integration, in higher education.

This chapter will mainly focus on the following sub points:

3.1 Current Status of ICT related Courses in the Curriculum of Faculty of Arts, University of Dhaka.

3.2 Integration of ICT into the curriculum

Hence the ICT integration process of Dhaka University will be depicted and also referred a conceptual framework (suggested by UNESCO) for developing ICT integration into curriculum in the Faculty of Arts.

3.3 ICT curriculum in Arts faculty of Dhaka University

Here the sample of ICT curriculum in Dhaka university will be presented and suggested a framework (according to UNESCO) for curriculum structure in Arts Faculty.

3.4 Teachers ICT usages

3.5 ICT competency standards for students

Chapter 4: Current Status of ICT: Data Analysis and Interpretation

This chapter will describe the data collection and analysis methods, In this chapter, analysis of the data collected will be performed – with the aim of formulating answers to the research questions.

Chapter 5: Problems and Prospects of Using ICT

This chapter will find out the barriers of using ICT into university curriculum and also make relationship between those barriers and represents the prospects of using ICT in higher education. This Chapter will mainly reflect the following sub points:

5.1 Barriers to the integration of ICT into higher education: the example of Dhaka University

5.2 Prospects of ICT in Arts Faculty of Dhaka University.

Chapter 6: Recommendations and Conclusion

An overall summary of the achievement of the objectives and goals will be made, as well as the prescribed guidelines for an effective ICT integration into classrooms will be suggested. The chapter concludes with some recommendations for future research. The major sub point of this chapter will be:

6.1 Recommendations

6.2 Some suggested ICT development models in higher education in Dhaka University.

6.3 Limitation of the study

6.4 Future course of work

6.5 Conclusion

The present study design can be visualized as follows:

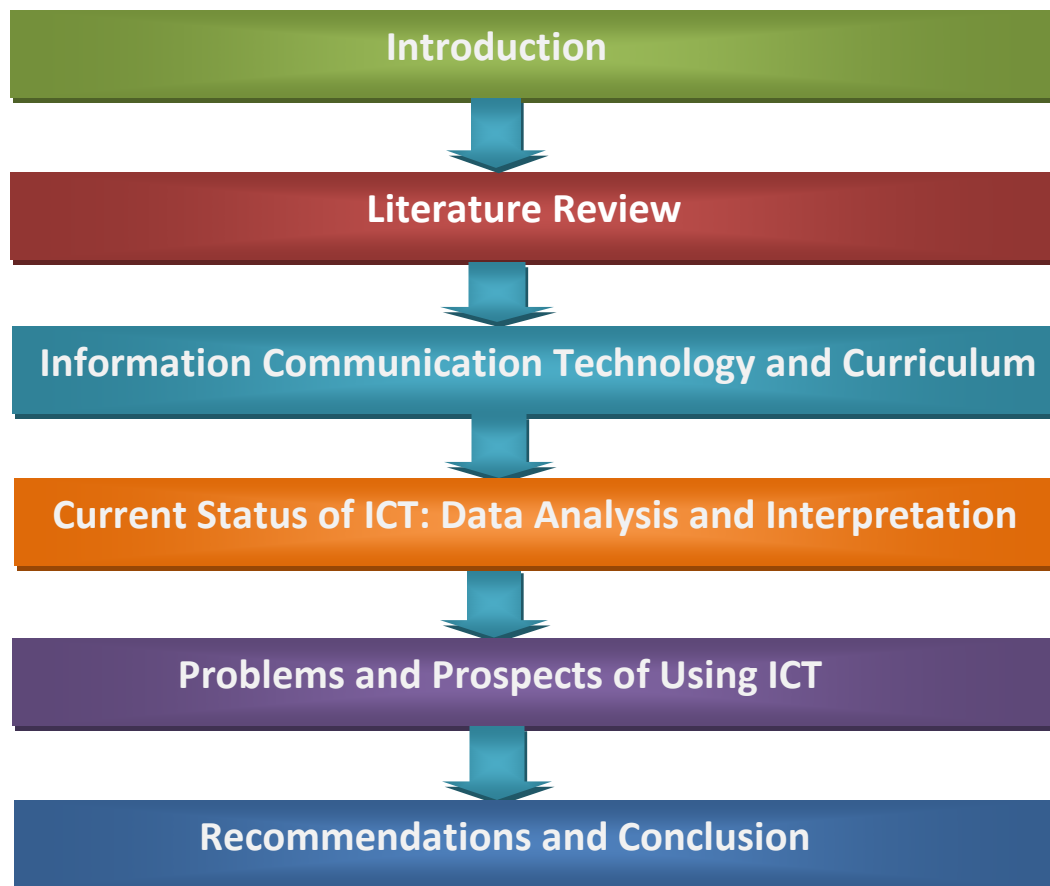


Figure-1.1: Schematic View of the Study

CHAPTER 2

Literature Review

CHAPTER 2

Literature Review

Prior to the actual research process an extensive survey on the related literature was conducted which, was of immense help in shaping the knowledge of the subject and providing an edge to comprehend the outcome. Though literature survey being integral to a research work certain limitations remain unavoidable in the process. As Kothari (1990) has pointed out, “much of the time and energy of the researching are spend to tracing out relevant materials from them”. Owing to the cross-disciplinary nature and vastness of the subject. However, with the limited time and resources every possible effort was made to review all literature found directly relevant to the certain theme of the topic. A comprehensive bibliography of the available literature has been compiled and given at the end of the dissertation.

2.1 Review the Related Literature

Initially the study has conducted a comprehensive literature review. The literature was both published and unpublished available at the local libraries and over the internet. Not only published materials have been reviewed but also all relevant unpublished materials, archival reports, dissertation paper, all the related books and journals have been reviewed to make the study more realistic and up to date. There are many problems solved by using this tool and topic related literature is needed in true investigation.

The author Dr. Gulbahar Yasemin [2008], reported through this article “ICT usage in higher education: A case study on pre-service teachers and instructors”, revealed that, the level of usage of pre-service teachers’ and instructors’ utilization of information and communication technologies (ICT). Thus, the main purpose of this study was to examine factors that contribute to pre-service teachers’ utilization of technology and suggest recommendations regarding to the effective utilization of technology. This case study used

data from a school of education in a private university. Results of this study indicated that teacher education programs fail to provide appropriate instructional technologies and computer facilities for both in and out of class activities. Furthermore, three factors that appear to have a significant influence on the effective use of technology were found to be: (1) the quantity and quality of the lessons addressing technology in the curriculum, (2) incompetent teachers/lack of in-service training, and (3) insufficient technological infrastructure.

Author Nafiz Zaman Shuva [2010], in his important article, “Integrating ICT into University Curriculum: A Proposal for the Faculty of Arts, University of Dhaka, Bangladesh”, stated that, the ways to integrate ICT into the departmental curriculum of Faculty of Arts, University of Dhaka as well as to identify the problems that hinder the integration process. Design/methodology/approach: The paper reviews the literature related to ICT integration into the academic curriculum, benefits of ICT integration and its related aspect. A survey was conducted by the researcher to find out the existing status of ICT integration in the curriculum of departments of the Faculty of Arts, University of Dhaka. Findings: It is found that most of the departments of the Faculty of Arts do not have ICT related courses in their syllabus. It is also found that most of the departments lack ICT related infrastructural facilities as well as there is no ICT equipment in the class room. This paper demonstrates the ways to integrate ICT into the curriculum of Faculty of Arts, University of Dhaka, which could also be taken to integrate ICT into the curriculum of other faculties. It presents a sample ICT curriculum for university students. Finally recommendation is made to integrate ICT into the academic curriculum of the universities in Bangladesh.

Dr Finger, Glenn [et al]. “Measuring Learning with ICTs: An external evaluation of Education Queensland's ICT Curriculum Integration Performance Measurement Instrument” depicted that the Analysis of the study From a review of national and international methodologies for describing and measuring ICT integration, there was found

to be a lack of substantial history and development with most studies undertaken since 1998. Moreover, most studies have focused on input indicators such as student to computer ratios, expenditure on ICTs, and the training and professional development of teachers. Within a context of emerging large scale investigations (e.g. SITES, En Gauge and BECTA) there have been accompanying pressures for the development of methodologies for measuring ICT use and student outcomes at classroom, school and system levels. This paper provides a summary of the methodology used to evaluate Education Queensland's ICT Curriculum Integration Performance Measurement *Instrument*. The evaluation involved three major data sources - statistical analysis of the data collected from 929 Education Queensland teachers in 38 schools who used the Instrument in 2003; a peer review process; and school-based teacher interviews involving 42 teachers from 6 selected Queensland schools. The resulting recommendations derived from the evaluation informed the refinement of the Instrument which is now called Learning with ICTs: Measuring ICT Use in the Curriculum. This paper also summarizes the recommendations and significant features of the Instrument.

David Nicol and Michael Coen in their important work “ A model for evaluating the institutional costs and benefits of ICT initiatives in teaching and learning in higher education” showed the Significant investments are being made in the application of new information and communications technologies (ICT) to teaching and learning in higher education. However recently, there has been little progress in devising an integrated cost- benefit model that decision-makers can use to appraise ICT investment options from the wider institutional perspective. This paper describes and illustrates a model that has been developed to enable evaluations of the costs and benefits of the use of ICT. The strengths and limitation of the model are highlighted and discussed.

“Dr. Sarah Prestridge” in his article “Teachers orientation towards ICT professional development” examines the demand for the transformation of pedagogy has precipitated a

worldwide concern for teacher professional development in Information and Communications Technologies (ICT). Approaches to ICT professional development that orientate teachers towards the attainment of ICT skills have become redundant. Rather notions of pedagogical analysis and development of teacher confidence in change are expected outcomes that enable teachers to transform their beliefs and practices. This paper examines the types of ICT professional development teachers prefer to engage in. A mixed method approach was adopted. Data are drawn from teacher interviews and a questionnaire. The findings suggest that teachers' orientation to ICT professional activity remain focused on technical competency even if they are interested in pedagogical analysis. It is not until a teacher has reached a personal competency level with an ICT application that they begin to seek more constructivist orientated ICT professional development activity.

Khalid Abdullah Bingimlas [2009], in his article "Barriers to the successful integration of ICT in teaching and learning environments: A review of the literature." Insisted that the use of ICT in the classroom is very important for providing opportunities for students to learn to operate in an information age. Studying the obstacles to the use of ICT in education may assist educators to overcome these barriers and become successful technology adopters in the future. This paper provides a meta-analysis of the relevant literature that aims to present the perceived barriers to technology integration in science education. The findings indicate that teachers had a strong desire to integrate ICT into education but that, they encountered many barriers. The major barriers were lack of confidence, lack of competence, and lack of access to resources. Science confidence, competence and accessibility have been found to be the critical components of technology integration in schools, ICT resources including software and hardware, effective professional development, sufficient time, and technical support need to be provided to teachers. No one component in itself is sufficient to provide good teaching. However, the presence of all components increase the possibility of excellent integration of ICT in learning and teaching opportunities. Generally, this paper provides information and recommendation to those responsible for the integration of new technologies into science education.

Filomena T. Dayagbil, Angeline M. Pogoy, Jewish A. Merin in their paper “ICT Integration in Teaching and Learning: Effects on Attitude, Course Outputs, and Achievement” reported that This quasi-experimental design with qualitative analysis aims to look into the effects of the use of ICT on attitude, course outputs and achievement of third year education students of Cebu Normal University. Results of the study revealed that there was a significant difference on the academic achievement, course outputs and attitude on ICT integration in teaching and learning in Curriculum Development course of those who were exposed in the program and those who were not. However, in the program only the attitude in ICT integration in teaching found out to have the influence on academic achievement. Course outputs and ICT integration in learning do not have any bearing on their academic achievement.

Author “Sutapa Bose” wrote an article titled [2011] “Instructions and reforms: Case study of four educational institutions” in “Malaysian Journal of Education Technology” (volume 11, number 1), reported that, The increasing dependence on Information and Communication Technology (ICT) and globalization are intertwined trends. Together, they are integrating societies and homogenizing cultures. Consequently educational systems of different societies are aspiring for similar practices and attainments. One such aspiration is to integrate ICT into the instructional system. This aspiration is based on the argument that ICT can reform instructional practices. The descriptive case study undertaken aimed to critically assess the nature of ICT use in the classrooms of four educational institutions of India - a government and a private senior secondary school, a coaching center and a nursery school and determine whether the emerging pattern of ICT use could lead to instructional reforms. Interpretation of information was done by anchoring it into a rubric developed with arguments in favor of ICT use for delivering instructions and frameworks for technology integration in instructional processes extrapolated from published literature. It was found that although in keeping with the global trend, ICT had been introduced into classrooms but the nature of ICT use in none of the institutions could usher reforms in instructional practices.

Said Al-Senaidi, Lin., Jim Poirot [2009] in their important work “Barriers to adopting technology for teaching and learning in Oman”, showed that this study investigates the perceived barriers to adopting information and communication technologies (ICT) in Omani higher education. One hundred faculty members from four different departments at the College of Applied Sciences in Oman participated in the study. The participants took a survey, which was developed based on the Western literature. Five factors were extracted from the survey: lack of equipment, lack of institutional support, disbelief of ICT benefits, lack of confidence, and lack of time. The findings showed that the faculty members perceived moderate degrees of barriers in applying ICT to their teaching practices. Group differences based on gender, academic rank, and academic field were generally not found except for the interaction effects on the barriers related to lack of equipment, disbelief of ICT benefits, and the overall mean. Male faculty members with less usage of ICT perceived more barriers regarding the lack of computing equipment, disbeliefs of ICT benefits, and the overall barrier than the female counterparts. It is recommended that the survey be further refined to include more subtle and culturally relevant items, larger sample sizes, and more heterogeneous samples to validate and extend the findings. Important implications of this study include a need to provide more institutional support, technical training, and personal time for faculty members to learn and upgrade their knowledge and skills in educational technologies.

Dr Finger, Glenn [et al]. presented in his article “Recommendations for the Development of an ICT Curriculum Integration Performance Measurement Instrument: Focusing on Student Use of ICTs” , An analysis of trends in international methodologies for describing and measuring Information and Communication Technologies (ICTs) curriculum integration reveals that there has been an identifiable focus on student access to ICTs, student attitudes toward the use of ICTs, and on teacher training and professional development in the use of ICTs (Jamieson-Proctor, Watson and Finger, 2003). There is now an emerging need for and trend towards the development of performance measurement

instruments which measure ICT curriculum integration. This paper provides recommendations for the development of an ICT curriculum integration performance measurement instrument through a summary of recent ICT curriculum integration research, and an examination of international methodologies for describing and measuring ICT curriculum integration. Specific reference is made to the theoretical framework conceptualized to guide the development of the instrument by identifying key strategic ICT drivers, dimensions of ICT use (DETYA, 2000a; DEST, 2002), and the integration of ICTs with the Productive Pedagogies framework (Education Queensland, 2000; 2003b).

2.2 Literature on ICT in Higher Education-Experience in Bangladesh

Educational systems around the world are under increasing pressure to use the new information and communication technologies (ICT) to teach students the knowledge and skills they need in the 21st century. The challenge confronting our educational systems is how to transform the curriculum and teaching-learning process to provide students with the skills to function effectively in this dynamic, information-rich, and continuously changing environment. ICTs provide an array of powerful tools that may help in transforming the present isolated, teacher-centered and text-bound classrooms into rich, student-focused, interactive knowledge environments. To meet these challenges, learning institutions must embrace the new technologies and appropriate ICT tools for learning. They must also move towards the goal of transforming the traditional paradigm of learning (Omwenga, 2005).

The experience of introducing different ICTs in the classroom and other educational setting all over the world over the past several decades suggests that the full realization of the potential educational benefits of ICTs is not automatic. The effective integration of ICTs into the educational system is a complex, multifaceted process that involves not just technology—indeed, given enough initial capital, getting the technology is the easiest part!—but also curriculum and pedagogy, institutional readiness, teacher competencies, and long-term financing, among others (Tinio, 2003).

ICT status of Bangladesh is not praiseworthy. Only 1.36 % population nationally reported access to computers (BBS, 2005) which shows the low use of computers by the people. Use of computer began in Bangladesh in the 1960s and assumed wider dimension in the nineties. The first computer in Bangladesh (erstwhile East Pakistan) was installed at the atomic energy centre, Dhaka of Pakistan Atomic Energy Commission in 1964. It was an IBM Mainframe Computer of 1620 series. The main use of the machine was resolving complicated mathematical calculations in different research works. Though the use of Internet worldwide spread rapidly in 1990, Bangladesh joined the bandwagon much later.

Use of Internet in the country started in 1995 for the first time in a limited way through offline e-mail. VSAT (Very Small Aperture Terminal) was first set up in 1996 for Internet purpose. PCs became easily available due to its easy use and cheapness in price. As a result, use of PCs started to increase in Bangladesh mainly since the last part of the eighties, especially in education and business concerns. However, wider use of computer in Bangladesh accelerated from the mid-nineties (Banglapedia, 2006).

Bangladesh University of Engineering and Technology (BUET) first introduced the formal education in Information Technology in 1984 by launching the Masters program in Computer Science and Engineering. Undergraduate courses started from 1986 with the first intake in 1987. University of Dhaka started one year Masters program in Computer Science in 1993. Besides, some Computer related courses such as Microprocessors and programming languages are taught in Applied Physics and Electronics department (Rahman, 2008).

In the annual session of June 2001, The University of Dhaka Senate established the Institute of Information Technology (IIT) by converting the erstwhile Computer Centre (Estd. in 1985). Institute of Information Technology creates efficient manpower in information technology and provides Network Service to the University. The Institute offers Master in

Information Technology (MIT) and Post Graduate Diploma in Information Technology (PGDIT) (University of Dhaka Prospectus, 2008). However due to lack of infrastructural facilities, funds, ICT skills and effective initiatives ICT situation at various departments of the University of Dhaka and in the administrative process is not worth mentioning.

The purpose of this study was to investigate and evaluate the nature of technology implementation in classroom practices at departments of Arts faculty of Dhaka university. The literature review highlights a body of knowledge and issues concerning the integration of technology in education from different perspectives and contexts. It examines technology implementation as an essential stage in effecting technology integration. These ideas and issues put into perspective how technology integration can be viewed in the context of Bangladesh education, with specific focus on higher education. Although some of the ideas are drawn from countries in which technology is already in an advanced stage, it may be that similar ideas apply even in less technologically advanced countries like Bangladesh. This literature will help to establish a framework or guidelines for evaluating the implementation of technology integration into higher education of Dhaka university.

CHAPTER 3

Information Communication Technology and Curriculum

CHAPTER 3

Information Communication Technology and Curriculum

3.1 Current Status of ICT related Courses in the Curriculum of Faculty of Arts, University of Dhaka

On the first day of July 1921 the University of Dhaka opened its doors to students with Sir P.J. Hartog as the first Vice-Chancellor of the University. The University started its activities with 3 Faculties, 12 Departments, 60 teachers, 877 students and 3 dormitories (Halls of Residence) for the students. At present the University consists of 13 Faculties, 66 Departments, 8 Institutes, and more than 30 Research Centres. The number of students and teachers has risen to about 33,000 and 1,500 respectively. (University of Dhaka Prospectus, 2012)

Established in 1921, the Faculty of Arts, one of the largest faculties of the university, consists of fifteen Departments. The academic activities of these departments are conducted by the Faculty of Arts. Table 1 shows the departments that are under the faculty of arts.

Departments of the Faculty of Arts

SL. No.	Name of the Department	Year of Establishment	No. of Current Students	No. of Faculty Members (including part time faculty)
1.	Department of Bengali	1921	783	28
2.	Department of English	1921	693	35
3.	Department of Arabic	1921	640	19
4.	Department of Persian Language & Literature (1921/2007)	1921/2007*	152	10
5.	Department of Urdu	1921/2007*	147	12
6.	Department of Sanskrit	1921/2007*	238	14
7.	Department of Pali and Buddhist Studies	1921/2007*	99	13
8.	Department of History	1921	616	42
9.	Department of Philosophy	1921	785	27
10.	Department of Islamic Studies	1921	652	27
11.	Department of Islamic History and Culture	1948	618	32
12.	Department of Information Science & Library Management	1959	471	17
13.	Department of Theatre and Performance Studies	1994	-	20
14.	Department of Music	1994	-	20
15.	Department of Linguistics	1992	99	15
16.	Department of World Religions	1999	99	15

Table 3.1 Departments of the Faculty of Arts

Source: Compiled mainly from the Annual Report of the University of Dhaka, 2010-2011.

* In 1921 Department of Sanskrit and Pali was established as one department. In 2007 Department of Sanskrit and Pali become two independent departments. One is Department of Sanskrit and other is Department of Pali and Buddhist Studies. Similarly Department of Persian and Urdu was established in 1921 which became two separate departments in 2007.

The researcher visited 16 departments of the Faculty of Arts to assess the current status of ICT integration into the syllabus of those departments. Table 2 shows the findings of that visit:

ICT related courses in the existing syllabus of the departments of the Faculty of Arts

SL. No.	Name of the Department	Degrees Conferred	ICT related Courses in the Existing Syllabus	Marks Distribution
1.	Department of Bengali	B.A. (Honors), Masters, M.Phil, PhD	No	-
2.	Department of English	B.A. (Honors), Masters, M.Phil, PhD	No	-
3.	Department of Arabic	B.A. (Honors), Masters, M.Phil, PhD	No	-
4.	Department of Persian Language & Literature	B.A. (Honors), Masters, M.Phil, PhD	No (Planning to introduce soon)	-
5.	Department of Urdu	B.A. (Honors), Masters, M.Phil, PhD	Course no. 106- Fundamentals of Information and Communication Technologies	1 st Year 2 nd Semester of B.A.(Honors) - 100 Marks (Theory)
6.	Department of Sanskrit	B.A. (Honors), Masters, M.Phil, PhD	Course no. 209- Computer Science	2 nd Year 3 rd Semester B.A. (Honors)-100 Marks (Theory)
7.	Department of Pali and Buddhist Studies	B.A. (Honors), Masters, M.Phil, PhD	Course no.205 Computer Science	2 nd Year 2 nd Semester B.A. (Honors)-100 Marks (Theory)
8.	Department of History	B.A. (Honors), Masters, M.Phil, PhD	No	-
9.	Department of Philosophy	B.A. (Honors), Masters, M.Phil, PhD	No	-
10.	Department of Islamic Studies	B.A. (Honors), Masters, M.Phil, Ph.D	i) Course no. 306- Computer Literacy	3 rd Year 6 th Semester of B.A. (Honors)-100 Marks (Theory & Practical)
			ii) Course no. 403- Computer Literacy	4 th Year 7 th Semester of B.A. (Honors)-100 Marks (Theory & Practical)
			iii) Course no. 509 (B)- Computer Literacy	Masters-100 Marks (Theory & Practical)
11.	Department of Islamic History and Culture	B.A. (Honors), Masters, M.Phil, PhD	No	-

12.	Department of Information Science & Library Management	B.A. (Honors), Masters, M.Phil, PhD	Course no. ISLM 207- New Technologies & Current trends in Information Systems	2 nd Year 3 rd Semester of B.A. (Honors)- 100 Marks (Theory)
			Course no. 211 Computer Hardware Maintenance & Troubleshooting	2 nd Year 4 th Semester of B.A. (Honors)- 100 Marks (Theory)
			Course no. 314 Automation of Information Institutions	3 rd Year 5 th Semester of B.A. (Honors)- 100 Marks (Theory)
			Course no. 318 Database Designs and Applications	3 rd Year 6 th Semester of B.A. (Honors)- 100 Marks (Theory)
			Course no. 426 Information Networking & Resource Sharing	4 th Year 8 th Semester of B.A. (Honors)- 100 Marks (Theory)
			Course no. 427 Analysis and Design of Information Systems	4 th Year 8 th Semester of B.A. (Honors)- 100 Marks (Theory)
			Course no. 503 Internet Studies & Web design	M.A.- 50 Marks (Theory)
			Course no. 504 Information Retrieval Techniques	M.A.- 50 Marks (Theory)
			Course no. 506 Library software packages and applications	M.A.- 50 Marks (Theory)
13.	Department of Theatre and Performance Studies	B.A. (Honors), Masters, M.Phil, PhD	No	-
14	Department of Music	B.A. (Honors), Masters, M.Phil, PhD	No	-
15.	Department of Linguistics	B.A. (Honors), Masters, M.Phil, PhD	No (But has fundamental computer training for students of the department)	-
16.	Department of World Religions	B.A. (Honors), Masters, M.Phil, PhD	No	-

Table 3.2 ICT related courses in the existing syllabus of the departments of the Faculty of Arts

It is clear from the above table that out of 16 departments only 5 departments offer more or less ICT related courses. It is very frustrating that 11 departments have no ICT related courses. Though some surveyed departments wish to introduce ICT course in their syllabus soon but in reality it will take time to introduce the course as it involves administrative process. It is also clear from the above table that the Department of Information Science & Library Management is offering the largest number of ICT related courses among the surveyed departments. However the department is offering ICT courses that are mainly theoretical. Practical courses should be included into the curriculum to ensure students efficiency with the technology. Another positive picture is that Department of Islamic Studies is offering 3 courses on ICT to its students which are very effective and deserves appreciation. They offer Basic to Advanced level computer literacy course to its students. Besides Department of Sanskrit and Department of Pali and Buddhist Studies offer one course on ICT for their students which also deserves appreciation.

Integrating ICT into the university curriculum is not an overnight process. It requires careful planning, cooperation and coordination among the faculties, departments and institutes, cooperation among the ICT professionals and faculty members and cordial support from university administration. Efforts should be made by the authority to integrate ICT into the curriculum of all the departments of the University of Dhaka. The author of this paper suggests the ways to integrate ICT into the curriculum of the Faculty of Arts which could also be taken to integrate ICT into the curriculum of other faculties.

Before we make a plan to introduce the ICT into the curriculum, we should assess the existing ICT infrastructure facilities at the 16 departments of the Faculty of Arts. Table 3 illustrates the existing status of ICT infrastructure of the 16 departments.

Status of ICT Infrastructure of Departments of Faculty of Arts

SL. No.	Name of the Department	Projector in the Class Room	Computer Lab	No. of Computers in the Lab/Library	Internet Facility for the Students
1.	Department of Bengali	No	No	No	No
2.	Department of English	Yes	No. But its library has computers for students.	05	Yes
3.	Department of Arabic	No	No	No	No
4.	Department of Persian Language & Literature	No	No	No	No
5.	Department of Urdu	No	No	No	No
6.	Department of Sanskrit	No	Yes	03	Limited access
7.	Department of Pali and Buddhist Studies	No	No	No	No
8.	Department of History	Yes	No	No	No
9.	Department of Philosophy	No	No. But its library has computer for students.	01	Limited
10.	Department of Islamic Studies	No	Yes	25	Yes
11.	Department of Islamic History and Culture	Yes	No	No	No
12.	Department of Information Science & Library Management	Yes	Yes	15	Yes
13.	Department of Theatre and Performance Studies	No	No	No	No
14.	Department of Music	No	No	No	No
15.	Department of Linguistics	Yes	Yes	11	Yes
16.	Department of World Religions	Yes	No	No	No

Table 3.3 Status of ICT Infrastructure of Departments of Faculty of Arts

Source: Field visit.

As evident from the above table it is very frustrating that in this age of information & communication technology most of the departments of the Faculty of Arts do not have computer facilities for the students. Out of 16 departments only 4 have their own computer

lab. It is worth mentioning that Department of Islamic Studies has the largest computer lab in the Faculty of Arts. Out of 16 departments only 6 have projector in the class room which is unexpected. Without a computer lab it is illogical to think that students of the respective departments will be able to exploit the information technology for development and will become lifelong learners.

Recently University Grants Commission (UGC) of Bangladesh has taken plan to modernization of classrooms under the grants from World Bank with the assistance of “Higher Education Quality Enhancement Project (HEQEP).according to this plan in Dhaka University all the Departments of Arts Faculty have modernized with multimedia projector.

The above discussion is enumerated the research question no. i.(What are the current trends of ICT integration into university curriculum in the Arts faculty of university of Dhaka?) of the study.

3.2 Integration of ICT into the Curriculum

To ensure effective and successful ICT integration, an Information & Communication Technology Curriculum Integration (ICTCI) task force should be formed. The process of the ICTCI task force formation is suggested from the article “Integrating ICT into University Curriculum: A proposal for the faculty of Arts, University of Dhaka, Bangladesh” (Nafiz Zaman Shuva, 2010). Here the author suggests that, Vice Chancellor of the university should be the Chairperson of that task force. Dean of the Faculty of Arts should be the Vice Chairman. Chairperson from each department should be the Executive Member of the task force. They will be liable to integrate ICT in their respective department. Director from the Institute of Information Technology will work as Executive Member to help in designing the curriculum. Industry representative should also be part of the task force as Executive Member for the standards or employability of the students.

Thus the total task force could be represented in the following way:

1. Chairperson
2. Vice- Chairperson
3. Executive Members

After the formation of the task force activities should be distributed to all members of the task force. First Chairperson of each department with the help of other teachers will propose ICT curriculum for their respective department and send it to the Dean of the faculty to review it thoroughly. After thorough revision by the Dean it will be presented at the General Meeting of ICTCI task force for approval. After it is approved by the task force it would be finally printed and distributed to all respective students and teachers. Information and Communication Technology Curriculum Integration (ICTCI) task force should continuously work for the successful integration of ICT, and time to time revision of the curriculum. Similar structure could be followed to integrate ICT into curriculum of other faculties of the University of Dhaka.

When teachers' training is completed successfully, integration of ICT into the curriculum starts. At this moment a general ICT curriculum should be taken by all departments lacking ICT integration into their curriculum. Some minor modifications or changes may be made if required. However before final integration of ICT into the curriculum ICT Infrastructure of the departmental class room and ICT skills of the teachers' should be assessed. After it is found that the departmental ICT infrastructure is satisfactory to run the courses on ICT and there are teachers who could teach the course then final ICT integration can be implemented. If it is found that there are some departments that have inadequate ICT infrastructure then necessary initiatives should be taken to promote the ICT infrastructures in those departments. In case of the Faculty of Arts as the survey conducted by the author already revealed that 11 departments require computer lab and 9 departments require multimedia projector.

The overriding purpose of ICT integration into curriculum is to create an environment for interaction among teachers and students and to harness the technological facilities. To meet up this purpose multi-media projector should be given to all departments those not using multimedia projector as well as sophisticated centralized video conferencing equipments can be installed at the Faculty of Arts office. It should be mentioned here that it is not possible for Faculty of Arts administration to provide up-to-date video conferencing equipment to all departments and offer technical and staff support for its maintenance instead it is possible to install and offer support centrally. Thus if any department wants to conduct video conference session could contact with the Faculty office and arrange it according to their requirements.

Faculty of Arts could take ICT integration into curriculum as a one year project. First month of the project is to be spent to form the ICTCI task force. After the task force is formed assessment of the ICT infrastructure of the departments and skills of the teachers should be assessed and necessary initiatives to create an environment to integrate ICT into the curriculum should be taken. Three months could be spent for teachers training and ICT infrastructure improvements. After teachers training and necessary improvements of the infrastructures are done, designing of the curriculum starts. Designing and reviewing the curriculum before sending it to the Dean's office and to the Academic Council of the University of Dhaka three months could be given. The rest of the six months could be needed to finally integrate into the curriculum and formally start the course as this requires some formal approval from the different academic bodies of the University of Dhaka.

3.2.1 A Conceptual Framework for ICT Integration in Dhaka University

Infusing ICT throughout university, it is useful to have a model for ICT development. UNESCO suggests a model "Continuum of approaches to ICT development", such a model is a representation of the essential Characteristics of ICT development to provide framework.

Model: A Continuum of Approaches to ICT Development

Studies of ICT development in both developed and developing countries identify at least four broad approaches. These four approaches, termed emerging, applying, infusing and transforming, represent a continuum depicted as the model in Figure 2.1



Figure 3.1: “Model Depicting a Continuum Approach to ICT Development in School”

Source: “Information and Communication Technology in Education” (UNESCO,2002).

The Emerging Approach

Universities at the beginning stages of ICT development demonstrate the emerging approach. Such universities begin to purchase, or have had donated, some computing equipment and software. In this initial phase, administrators and teachers are just starting to explore the possibilities and consequences of using ICT for the management and adding ICT to the Curriculum.

Universities at this emerging phase reflect the curriculum in basic skills but there is an awareness of the uses of ICT. This curriculum assists movement to the next approach if so desired.

The Applying Approach

In this secondary phase, administrators and teachers use ICT for tasks already carried out in University management and in the curriculum. Teachers largely dominate the learning environment.

Universities at the applying approach phase adapt the curriculum in order to increase the use of ICT in various subject areas with specific tools and software. This curriculum assists movement to the next approach if so desired.

The Infusing Approach

At the next stage, the infusing approach involves integrating or embedding ICT across the curriculum, and is seen in those universities that now employ a range of computer based technologies in laboratories, classrooms and administrative offices. Teachers explore new ways in which ICT changes their personal productivity and professional practice. The curriculum begins to merge subject areas to reflect real-world applications

The Transforming Approach

Universities that use ICT to rethink and renew university organization in creative ways are at the transforming approach. ICT becomes an integral part of professional practice. The focus of the curriculum is now learner-centered and integrates subject areas in real world applications. ICT is taught as a separate subject at the professional level and is incorporated into all vocational areas. Universities have become centers of learning for their communities

3.3 ICT Curriculum in Arts Faculty of Dhaka University

Sample of ICT Curriculum and Marks distribution of ICT course are depicted from the article **“Integrating ICT into University Curriculum: A proposal for the faculty of Arts, University of Dhaka, Bangladesh”** (Nafiz Zaman Shuva, 2010).

A sample ICT Curriculum which could be taken into consideration while designing the curriculum shown in the following table.

Sample of ICT Curriculum

Title	Brief Contents	Learning Outcomes
Basic Hardware	i) Types of Computers ii) Function of various computers iii) Factors influencing while purchasing of computers iv) Basic hardware troubleshooting and maintenance	Students should be able to: <ol style="list-style-type: none"> identify types of computers, how they process information and how individual computers interact with other computing systems and devices identify the function of computer hardware components identify the factors that go into an individual or organizational decision on how to purchase computer equipment identify how to maintain computer equipment and solve common problems relating to computer hardware
Windows	Set-up windows, Install software, basic windows use.	Students should be able to: <ol style="list-style-type: none"> identify what an operating system is and how it works, and solve common problems related to operating systems manipulate and control the Windows desktop, files, and disks identify how to change system settings, install and remove software format the hard disk, Set up new windows xp/vista. create New folder, delete existing folder
Windows Office	Basic use of MS Word, Excel, Power Point, Data Access, Front Page and other softwares.	Students should be able to: <ol style="list-style-type: none"> use Microsoft office package. use various educational software
Internet	Services available through internet, search techniques of various search engines, evaluate search strategy and search results as well as search engines, basic e-mail function, subscribe to subject related list-serv, create online group, use online research tools, blogging , use social networking tools, use selected e-learning platform and so on.	Students should be able to: <ol style="list-style-type: none"> state the various services available through internet use advanced search techniques for various search engines on the WWW evaluate the search strategy and the search results perform basic e-mail function subscribe to list servs practice basic e-mail netiquette create online blogs use available online research & social networking tools and selected e-learning platform and so on
Web Browser	Introduction to various web browsers, use of various web browsers.	Students should be able to: <ol style="list-style-type: none"> skim and scan for information on a web page set options and preferences to customize desktop download and use plug-ins such as Adobe Acrobat Reader and RealPlayer for Digital Library Collections download software from the net save web file to hard drive and/or pen drive print web page use internet option use bookmark save image file etc.

Networks	Network Fundamentals	Students should be able to: i .Identify network fundamentals and the benefits and risks of network computing ii. Identify the relationship between computer networks, other communications networks.
Social and Ethical Issues	Basic concepts such as computer crime and fraud, equity, intellectual ownership, privacy of information, links between automation and unemployment, and computer security (theft, hacking, viruses)	Students should be able to demonstrate an understanding of (UNESCO, 2002): i. the benefits and drawbacks of computer use to society in general; ii. the economic advantages and disadvantages of the use of computers; iii. the ethical questions that have arisen as a result of computer use with iv. respect to privacy aspects, copyright issues and computer viruses; v. the current situation and trends in computing against the background vi. of past developments in a) hardware; b) software; and c) ways of operating.

Table 3.4: Sample of ICT Curriculum

Source: Compiled from the article “Integrating ICT into University Curriculum: A proposal for the faculty of Arts, University of Dhaka, Bangladesh” (Nafiz Zaman Shuva, 2010).

This marks distribution of Information Technology course is not final. The departments themselves should design it in their own way. Table 5 shows a sample marks distribution on ICT course:

Sample Marks distribution of Information Technology Course

Title	Marks
Class Test	10
Presentation	05
Midterm	10
Practical	35
Semester Final	40
Total	100

Table 3.5: Sample Marks distribution of Information Technology Course

Source: Compiled from the article “Integrating ICT into University Curriculum: A proposal for the faculty of Arts, University of Dhaka, Bangladesh” (Nafiz Zaman Shuva, 2010).

3.3.1 A Framework for Curriculum Structure in Arts Faculty

UNESCO suggests a model that provides the framework for an ICT curriculum for students and professional development of teachers. This model is referred to as “Stages of Teaching and Learning with and through ICT”.

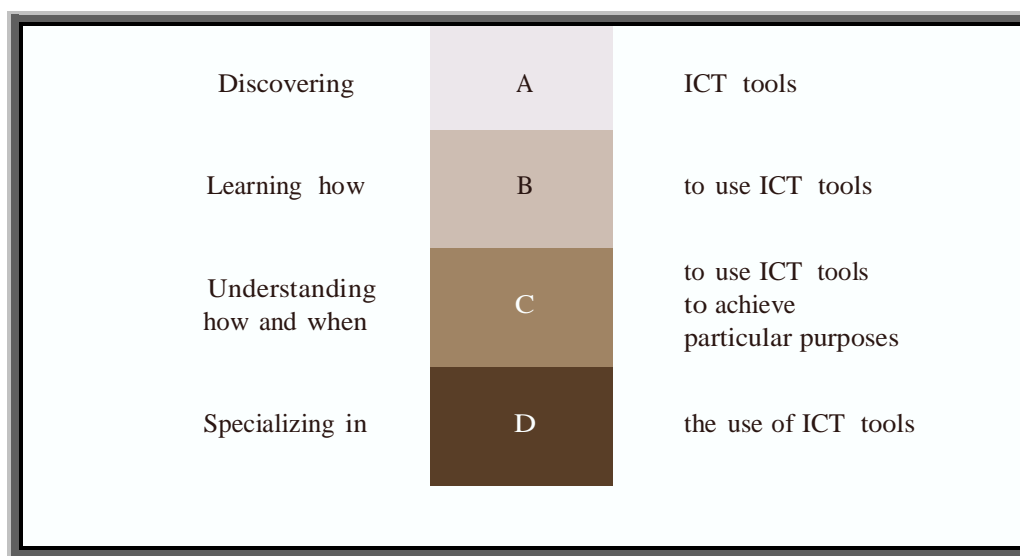


Figure 3.2 Model of Stages of Teaching and Learning with and through ICT

Source: “Information and Communication Technology in Education” (UNESCO,2002).

The model depicted in Figure 3.2 is useful in developing the structure of a curriculum designed for both teachers and students to improve their knowledge and skills in ICT. The design supplies four curriculum areas tied to the four stages of teaching and learning, allowing universities to progress from:

First Stage:

The first stage (Stage A in Figure 3.2) in ICT development is “Discovering ICT Tools”. There is usually an emphasis on ICT literacy and basic skills.

ICT Literacy

This curriculum area covers the use of ICT as specific units include basic concepts of ICT, using computers and managing files, word processing, spreadsheets, databases, creating presentations, finding information and communicating with computers, social and ethical issues, and jobs using ICT.

Second Stage:

This stage involves the use of general or particular applications of ICT, in subject areas.

Application of ICT in subject areas

This area of the curriculum covers the application of ICT tools for working within specific subject areas such as languages, natural sciences, mathematics, social sciences and art. Specific units include measurement, modeling and simulation, feedback devices, statistics, creating graphics, spreadsheet design and database design.

Third Stage:

The next stage (Stage C in Figure 3.2) is understanding how and when to use ICT tools to achieve a particular purpose. This stage implies the ability to infuse ICT across the curriculum.

Infusing ICT across the curriculum

Examples of projects include in this area of the curriculum demonstrate the use of ICT across subject areas to work on real-world projects and to solve real problems. Some examples show how, within a particular course, ICT can help students integrate several subject areas, such as mathematics, science and art. Other examples show larger projects that can across several subject areas or illustrate how a number of universities can integrate ICT in community or global projects.

Fourth Stage:

The fourth and last stage (Stage D in Figure 3.2) involves specializing in the use of ICT tools.

ICT specialization

This area of the curriculum is designed for students who plan to go into professionals that use ICT such as, for example, engineering, business and computer science, or for students who plan to advance to higher education. Content covers the use of advanced tools and techniques for the ICT specialist. Specific units include basic and advancing programming, planning information systems, designing process control system and project management

The research question no. ii. (Which guidelines should be followed to ensure a successful integration of ICT in the Arts faculty of Dhaka university?) of the study have been solved through the above two frameworks suggested by UNESCO.

3.4 Teachers' ICT Usage

The integration of information and communication technologies can help revitalize teachers and students. This can help to improve and develop the quality of education by providing curricular support in difficult subject areas. To achieve these objectives, teachers need to be involved in collaborative projects and development of intervention change strategies, which would include teaching partnerships with ICT as a tool. Teachers' attitudes are major predictors of the use of new technologies in instructional settings. Teachers' attitudes toward ICT shape not only their own ICT experiences, but also the experiences of the students they teach.

3.4.1 Professional Development of Teacher

The primary aim of this study is to develop an ICT curriculum for higher education, such development would be insufficient without considering the professional development of teachers. Therefore, to prepare teachers for a new ICT curriculum the researcher plan to relate teacher professional development to the approaches identified in terms of ICT development in the university to which it is tied.

There are different ways of conducting professional development program. Many universities organize meetings and after-university sessions where teachers can be trained in using particular software under the guidance of a fellow teacher.

For example, in some countries, teacher education institutes and other(often private) enterprises provide a range of courses in basis ICT instruction.

Description and Rationale for Nine ICT Literacy Units in a Program of Teacher Professional Development according to UNESCO

Unit	Description
A1 Basic Concepts of ICT	<ul style="list-style-type: none"> • to identify and understand the functions of the main components and of various peripherals of a typical information and/or communication system. • to understand the main functions of the systems software environment in relation to the main generic applications software.
A2 Using the Computer and Managing Files	<ul style="list-style-type: none"> • to use the main functions of the systems software environment and to utilize its features in relation to the main applications software being used.
A3 Word Processing	<ul style="list-style-type: none"> • to use a word processor skillfully and intelligently to produce various readable and structured documents.
A4 Working with a Spreadsheet	<ul style="list-style-type: none"> • to understand and make use of a prepared spreadsheet.
A5 Working with a Database	<ul style="list-style-type: none"> • to understand and make use of a prepared database.
A6 Composing Documents and Presentations	<ul style="list-style-type: none"> • to make and use graphical (re)presentations.
A7 Information and Communication	<ul style="list-style-type: none"> • to understand and be able to communicate with computers online, with sources of information, as well as with other people.
A8 Social and Ethical Issues	<ul style="list-style-type: none"> • to understand the social, economic and ethical issues associated with the use of ICT. to explain the current situation and trends in computing against the background of past developments.
A9 Jobs and/with ICT	<ul style="list-style-type: none"> • to be aware of the nature of change of jobs in one's own discipline and in the teacher profession itself, to be aware of the way ICT plays a role in these different jobs.

3.6 Description of Nine ICT Literacy Units in a program of Teacher Professional Development according to UNESCO

Source: "Information and Communication Technology in Education" (UNESCO,2002).

Rationale
It is not only necessary to know the basic principles of ICT and the use of ICT for personal development but also to cope with the daily life contexts of students and teachers.
It is necessary for all teachers to be able to use ICT for their own purposes and to help students to use ICT.
Word processing is the most commonly used application of ICT. It is helpful to make documents (e.g. letters, tests, and assignments) for teaching purposes and to be able to help students in using word processing. Word processing is necessary for teachers in all subjects.
Spreadsheets are useful for many teaching and personal uses: preparing class lists, mark sheets, and tax returns. Spreadsheets are relevant in all subjects.
Most information systems in use today (e.g. school administration) are based on the principles of databases, and so an understanding of databases is useful for teachers. Databases are also useful in the teaching of many subjects.
As with word processing, the ability to layout documents and make presentations is useful for many teaching purposes. Such abilities are also relevant in the context of multiple learning styles of students.
Using email and searching for information on the Internet is important for teachers personally. It is also important that they can assist students in these basic literacy skills. As schools begin to set up their own Intranets, this unit becomes even more relevant.
It is critical that teachers set good examples for students with respect to such ICT issues as privacy, copyright, backing up of data, and virus protection. Teachers in all subjects need to be role models.
It is part of a teacher's professional development and attitude to know about changes with respect to ICT in the profession, and in a teacher's own subject area, as well as in the general work force that students will enter.

3.7 Rationale of Nine ICT Literacy Units in a program of Teacher Professional Development according to UNESCO

Source: “*Information and Communication Technology in Education*” (UNESCO, 2002).

Learning materials on most aspects of ICT are available on the internet for self –learning. Teachers often prefer different software tools, but it is best to organize a systematic program of professional development for teachers to ensure that all teachers are adequately prepared for an ICT curriculum.

Applying ICT to Teachers' Subject Areas

After teachers have acquired basic ICT skills and knowledge, they feel confident in using a number of generic and specialized ICT tools that can be applied to the teaching of their subject areas. The opportunity to apply ICT in all of their teaching is often limited by a lack of ready access to ICT facilities and resources.

Specific teachers subject areas are provided in which teachers can apply ICT in their teaching.

- ICT in Languages
- ICT in Natural Sciences
- ICT in Mathematics
- ICT in Social Sciences
- ICT in Art
- Measurement
- Modeling and Simulation
- Robots and Feedback Devices
- Statistics
- Creating Graphics
- Music
- Spreadsheet Design
- Database Design

Source: “Information and Communication Technology in Education” (UNESCO, 2002).

3.4.2 Teacher Training Courses and Workshop on ICT Pedagogy Integration of Arts Faculty, University of Dhaka

The introduction of information and communication technologies (ICTs) in the educational field has required the training programs for faculty on the use of ICTs. The main obstacle for designing any ICT training program has to do with the lack of information on the actual needs of faculty members and the type of format that should be utilized for those training needs. ICTCI task force should ensure teachers training on ICT. Because without comprehensive training on ICT knowledge it is illogical to think that ICT integration into curriculum will bring positive result.

3.4.3 The Role of Teacher Training in Facilitating of ICT

After successful completion of the teachers' training it is expected that a teacher will be able to:

- i. research, analyze and interpret current policy documents on teacher competencies in ICT
- ii. research, analyze and apply syllabus prescriptions on the embedding of ICT outcomes in teaching and learning in their respective subject
- iii. select information and communication technology-based learning strategies and resources to meet student learning need
- iv. create learning experiences in which students use information and communication technologies to research, interpret, analyze, communicate and represent knowledge.
- v. demonstrate an awareness of a range of learning technology resources and how they can be integrated constructively and creatively with other resources in the curriculum area
- vi. deploy learning technologies to assist students develop critical learning skills
- vii. design learning experiences in which students actively use ICT to research, interpret, analyze, communicate and represent knowledge and understanding
- viii. help students become lifelong learners.

To introduce ICT into their classrooms, teachers should believe in the effectiveness of technology, and teachers should also believe that they have control over technology.

3.5 ICT Competency Standards for Students

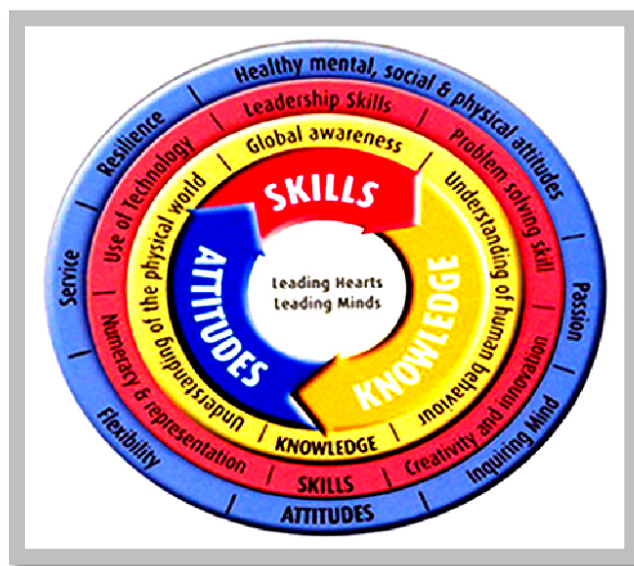


Figure 3.3: ICT Competency Standard for Students

Source : Compiled from Internet

Creativity and Innovation

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:

- a. Apply existing knowledge to generate new ideas, products, or processes.
- b. Create original works as a means of personal or group expression.
- c. Use models and simulations to explore complex systems and issues.

Communication and Collaboration

Students use digital media and environments to communicate and work collaboratively, including a distance, to support individual learning and contribute to the learning of others.

- a.** Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media.
- b.** Communicate information and ideas effectively to multiple audiences using a variety of media and formats.
- c.** Develop cultural understanding and global awareness by engaging with learners of other *cultures*.
- d.** Contribute to project teams to produce original works or solve problems.

Research and Information Fluency

Students apply digital tools to gather, evaluate, and use information. Students:

- a.** Plan strategies to guide inquiry.
- b.** Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.
- c.** Evaluate and select information sources and digital tools based on the appropriateness to specific tasks.
- d.** Process data and report results.

Critical Thinking, Problem Solving, and Decision Making

Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Students:

- a.** Identify and define authentic problems and significant questions for investigation.
- b.** Plan and manage activities to develop a solution or complete a project.

- c. Collect and analyze data to identify solutions and/or make informed decisions.
- d. Use multiple processes and diverse perspectives to explore alternative solutions.

Digital Citizenship

Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:

- a. Advocate and practice safe, legal and responsible use of information technology.
- b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.
- c. Demonstrate personal responsibility for lifelong learning.
- d. Exhibit leadership for digital citizenship.

Technology Operations and Concepts

Students demonstrate a sound understanding of technology concepts, systems, and operations. Students:

- a. Understand and use technology systems.
- b. Select and use applications effectively and productively.
- c. Troubleshoot systems and applications.
- d. Transfer current knowledge to learning of new technologies.

Student ICT Expectations

The Student ICT Expectations can help teachers and school administrators plan meaningful and engaging learning experiences that incorporate the use of ICT.

They aim to help students develop their ICT knowledge, understanding, ways of working and skills needed for learning and working in today's digital world.

The Student ICT Expectations will assist schools with the implementation of the Curriculum, General Capability, ICT Capability which recognizes that successful learners are creative and productive users of technology, especially ICT, as a foundation for success in all learning areas.

The Student ICT Expectations identify the ICT knowledge, understanding, ways of working and skills. Based on the National Statements of Learning for Information and Communication Technology. ICT The Expectations include the elements of ICT Competence as articulated in the Curriculum:

- Inquiring with ICT
- Creating with ICT
- Communicating with ICT
- Ethics, Issues and ICT
- Operating ICT.

The Student ICT Expectations are embedded within the Curriculum into the Classroom units and provide specific examples of how ICT can be used to develop and consolidate curriculum understandings across learning areas.

The research question no. iii. (What approaches and strategies of integrating technology do teachers and students employ in learning and teaching?) related to the main study will be addressed through the above point of 3.3 to 3.5

Preparing students for real life in our technological and diverse world requires that teachers embed ICT in significant learning experiences . However, research studies show that most teachers do not make use of the potential of ICT to contribute to the quality of learning environments, although they value this potential quite significantly. As a consequence, the use of ICT will not only enhance learning environments but also prepare next generation for future lives and careers.

CHAPTER 4
Current Status of ICT:
Data Analysis and Interpretation

CHAPTER 4

Current Status of ICT: Data Analysis and Interpretation

The analysis and interpretation of data collected from the respondents through questionnaires is the most important process in the survey type research and the quality of the findings of the study depend on the way of analysis and interpretation of the available statistical information. Analysis means categorizing, ordering, manipulating and summarizing of data to obtain answers to research problems can be studies and tested.

In this chapter, the investigation has been taken care to quantify the data for easy interpretation by using different stations, as the sample population comprises users from different statistical methods. The analysis itself requires specifications, as the study summarizes the results of questionnaires and interviews conducted during the course of the study. Five departments of Dhaka University were investigated with questionnaires collected from 25 teachers and 100 students.

The overall findings of the survey are presented in this chapter in two sections:

Section-I: Interpretation the findings of teachers' questionnaire.

Section-II: Interpretation the findings of students' questionnaire.

Several important interrelated themes emerged from the findings, including how participants used ICT, the different ways and levels of access, the challenges involved particularly those relating to limited funding and the lack of resources and training.

Section-I

4.1 Findings of the Teachers' Interviews:

A total of 25 teachers completed the teachers' questionnaire. The Teachers' Questionnaire collected the data on the teachers' experiences, beliefs, and practices with regard to ICT adoption in their respective Departments.

General Information about Teachers':

Sex and Age of Respondents:

It is quite natural that, majority of the respondents (84%) comprises of male. This shown that the male community is attracted in adoption of ICT in teaching. Of course, 16% respondents are female community, reveals that they are slowly entering in the adoption of ICT in teaching.

The respondents' age ratio is also shown in table 4.1. It is seen from the following table that, 32% of the respondents are at the age up to 41 years, followed by 24% between 31-35 years and 36-34 years age group.

User Category	Frequency	Parcent	Cumulative Parcent
Sex			
Male	21	84.0	84.0
Female	4	16.0	100.0
Total	25	100.0	
Age range			
26-30 years	5	20.0	20.0
31-35 years	6	24.0	44.0
36-40 years	6	24.0	68.0
+ 41 years	8	32.0	100.0
Total	25	100.0	

Table -4.1: Sex and Age of Respondents

Academic Status of Respondents:

Table- 4.2 reveals that majority of the respondents (44%) comprises from the department of ISLM. It means the ISLM department is more committed towards ICT than others. It also reveals that the teachers have been teaching between 2-5 and 6-10 years showed positive attitude towards ICT in teaching

User Category	Frequency	Parcent	Cumulative Parcent
Department			
ISLM	11	44.0	44.0
Urdu	3	12.0	56.0
Sanskrit	3	12.0	68.0
Pail	3	12.0	80.0
Islamic Studies	5	20.0	100.0
Total	25	100.0	
Teaching Year			
0-1 year	4	16.0	16.0
2-5 years	6	24.0	40.0
6-10 years	6	24.0	64.0
11-12 years	5	20.0	84.0
+ 15 years	4	16.0	100.0
Total	25	100.0	

Table 4.2: Academic Status of Respondents

Teachers' Access and Use of ICT

Access to ICT can be done in a formal way in a university environment. This section presents the findings associated with the various uses of ICT in the teaching will also be reported.

Use of ICT in Teaching

ICT pedagogical skills refer to the use of ICT for the purpose of teaching. Figure-4.1 reflected that the highest ICT is used in Information Science and Library Management Department, which is almost 61% where as it is 17% in Islamic studies. The use of ICT in Pali and Buddhist Studies Department is 11%. On the other hand the lowest use of ICT is accounted for 6% and 5% respectively in Sanskrit and Urdu Department. From the above discussion it is clear that the ISLM department is more advanced to integrate ICT in teaching.

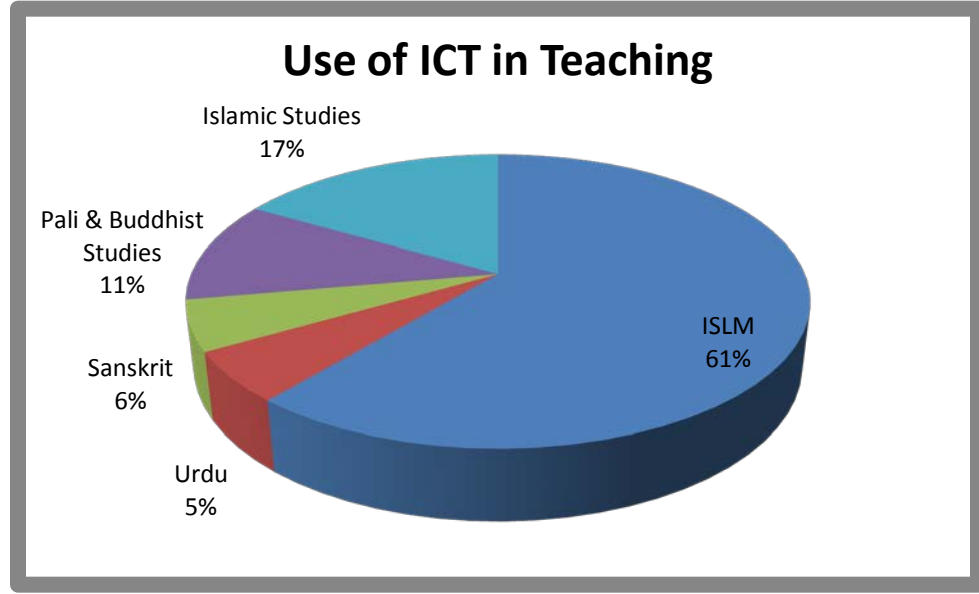


Figure-4.1: Use of ICT in Teaching

Technologies Used by Teachers

Teachers were asked about the technologies they used in their classroom. Table-4.3 mention that 46% teachers using Multimedia projector, although University Grants Commission has distributed multimedia projector to all departments in the Faculty of Arts, under the grants from World Bank with the assistance of HEQEP, but uses of multimedia projector haven't started yet in all departments due to lack of technical support, 33% use USB Memory and only 21% use tutorials. On the other hand there is no use of video conference and Digital interactive board.

Thus it is clear that there is a lack of technical resources in the Faculty of Arts in Dhaka University.

Using technology teaching	ISLM (11)	Urdu (3)	Sanskrit (3)	Pali & Buddhist Studies (3)	Islamic Studies (5)	Total NO (25)
Tutorials	5	1	-	-	1	7 (21%)
Multimedia Projector	10	1	-	1	3	15 (46%)
USB Memory	8	-	1	1	1	11 (33%)
Video conference	-	-	-	-	-	-
Digital interactive boards	-	-	-	-	-	-

Table-4.3: Technologies Used by Teachers

Reasons for not Using ICT:

The respondents were asked about reasons for not using ICT. The responses are listed in table-4.4

Reasons for not using ICT	ISLM (11)	Urdu (3)	Sanskrit (3)	Pali & Buddhist Studies (3)	Islamic Studies (5)	Total NO (25)
They are non existent	-	-	-	-	-	-
Not skilled enough	-	-	-	-	1	1 (7%)
Lack of technical Support	-	2	1	-	1	4 (27%)
Lack of time	-	-	-	1	-	1 (7%)
Others	-	-	1	1	-	2 (13%)

Table4. 4. Reasons for not Using ICT

In the above table, 27% teachers accused that there are lack of technical support in their department and 7% teachers acknowledged that they are not skilled enough and also have lack of time. Thus it is evident from the above table that there is lack of technical support, lack of skilled personnel and enough time in the faculty of Arts to integrate ICT in their classroom.

Using ICT Resources

The figure-4.2 reflected the use of ICT resources, where about 20 teachers use word processing tools, more than 10 teachers use spreadsheets whereas 10 teachers use educational software. On the other hand only 4-6 teachers use Digital Encyclopedia and other resources. It is clearly seen that there is enough lack of ICT resources in the Arts Faculty.

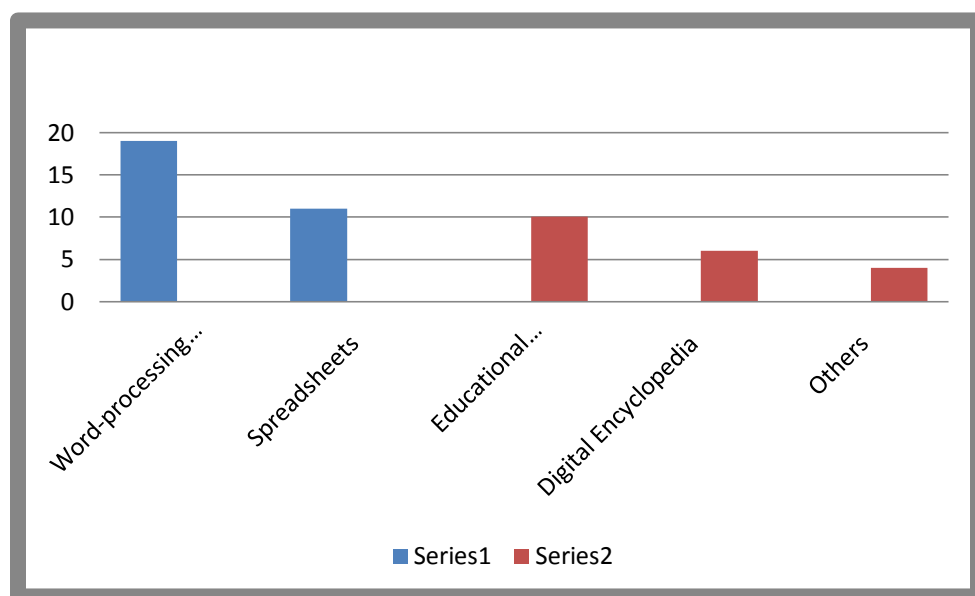


Figure-4.2: Using ICT resources

Computer Training Course

The teachers under this investigation were asked about attended a formal computer training course. Table 4.5 shows that, 60% of teachers had attended computer training course, thus it is prove that teachers are becoming interested to use ICT.

	ISLM (11)	Urdu (3)	Sanskrit (3)	Pali & Buddhist Studies (3)	Islamic Studies (5)	Total NO (25)
Have attended a formal computer training	10	0	1	2	2	15 (60%)

Table 4.5: Computer Training Course

Training Sponsored:

It is seen that approximately 90% teachers have attended the training course by self-sponsored, which was the highest initiative whereas the initiative of Arts Faculty was 40% on the other hand the lowest initiative was 20% by private body. This was closely followed by the Departments, 10% (figure4.3).

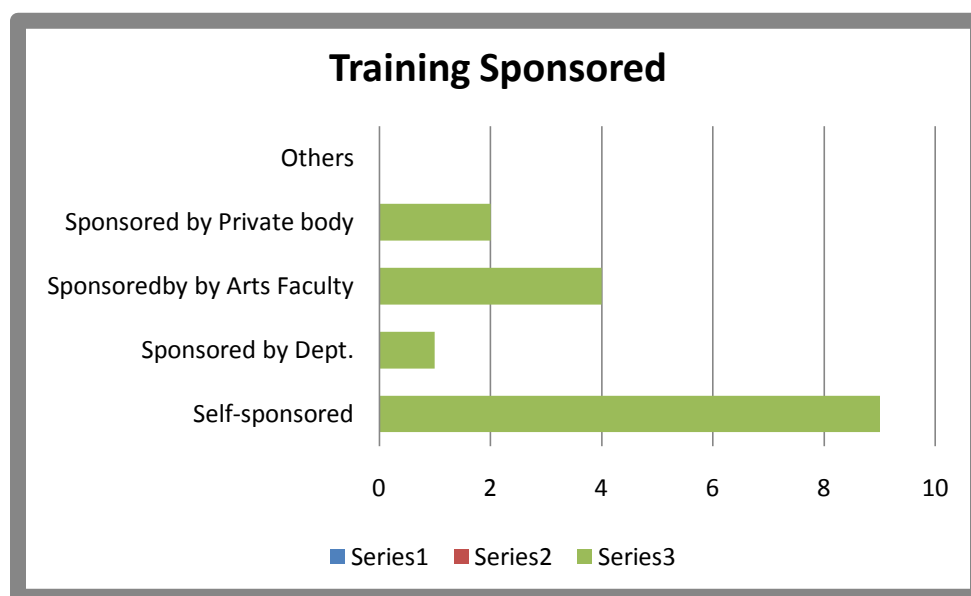


Figure-4.3: Training Sponsored

As indicated by the above figure, the initiative of the Departments of Arts faculty for training course was not enough.

Teachers' Opinion about Students and Department

The following table reports and highlights the extent of readiness of teachers regarding the use of ICT in teaching and learning. During interviews with teachers, a 5-point Likert-type scale (Strongly agree - completely disagree) was used to obtain their views on ICT in departments. The findings are reported in Table-4.6.

Statement	Valid N =2	Minimum	Maximum	Mean Deviation	Standard Deviation
Students would learn better using ICTs	25	1.00	3.00	1.4400	.65064
Students imply a new pedagogical approach	25	1.00	4.00	1.800	.78102
Computer will distract students	25	1.00	5.00	3.3200	1.06927
Department lack support to use ICT	25	1.00	5.00	3.0800	1.15181
Teachers are not interested in problem-solving using computers	25	1.00	5.00	3.2400	1.20000
Department authorities are not committed towards ICT integration	25	1.00	5.00	3.5600	1.22746
I would use ICT if the faculty of Arts made provision for rewards for ICT by the Faculty of Arts	25	1.00	3.00	1.8400	.74610

Table4.6: Teachers' Opinion about Students and Department

As indicated by the mean deviation, the statement of **“students would learn better with ICT”** and **“Students imply a new pedagogical approach”** is agreed by the teachers interviewed. This confirms their early view of ICT as being valuable tools to integrate ICT in their teaching.

With the ever-increasing debate over **“technology as a distraction to students”**, where concerns are expressed on issues, such as technology in the classroom distracting learning, because students may access the Internet instead of paying attention to teachers. The findings in the above Table show that teachers disagreed with the idea that technology could distract learners, as reflected by the Mean Deviation.

Similar responses obtained when teachers asked about the statements of **“Department lack support to use ICT”**, **“Teachers are not interested in problem-solving using computers”** and **“Department authorities are not committed towards ICT integration”** Teachers are not agreed to these statements as mentioned by the Mean Deviation.

As indicated by the Mean Deviation, teachers are strongly agree to use ICT in teaching, if provision for rewards were made by the Faculty of Arts.

The integration of ICT into university largely depends on teachers' attitudes .However, findings show a positive perception of ICT from the teachers interviewed.

Section II:

4.2 Findings of Students' Interview:

Age, Sex and Department of Students'

User Category	Frequency	Parcent	Cumulative Parcent
Sex			
Male	60	60.0	60.0
Female	40	40.0	100.0
Total	100	100.0	
Age range			
19-21 years	65	65.0	65.0
22-24 years	35	35.0	100.0
Total	100	100.0	
Department			
ISLM	20	20.0	20.0
Urdu	20	20.0	40.0
Sanskrit	20	20.0	60.0
Pali	20	20.0	80.0
Islamic Stadies	20	20.0	100.0
Total	100	100.0	

Table-4.7: Age, Sex and Department of students

It is quite natural that, majority of students are in the age group of 19-21(65%) and 35% of students are in the age group of 22-24. 60% of them are male and rests are female. Each department has equal respondents.

Students' Access to ICT

This pie chart reported different percentage of students' access to ICT through the following five Departments of Dhaka University.

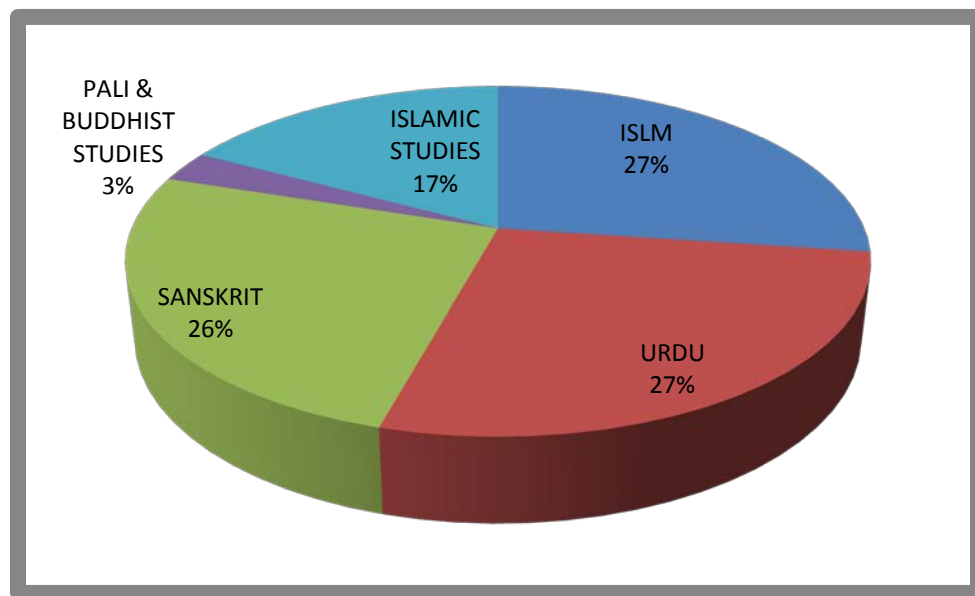


Figure-4.4: Students' Access to ICT

It is reflected from the above pie chart that, the rate of students' access to ICT was highest in ISLM and Urdu department, which was 27%. This was closely followed by Sanskrit department, 26%. While it was 17% in Islamic studies department and 3% the lowest rate of access to ICT in Pali and Buddhist Studies department. Thus it means, the students of Pali and Buddhist Studies department haven't adequate facility to access ICT.

Frequency of Using ICT:

From the following figure it is clearly understood that, 25% of the students say they use ICT almost every day and approximately 7% of them use ICT on weekly basis, whereas only 5% of them use it a few times a month and once a month. But the majority of students about 30% use ICT a few times a week.

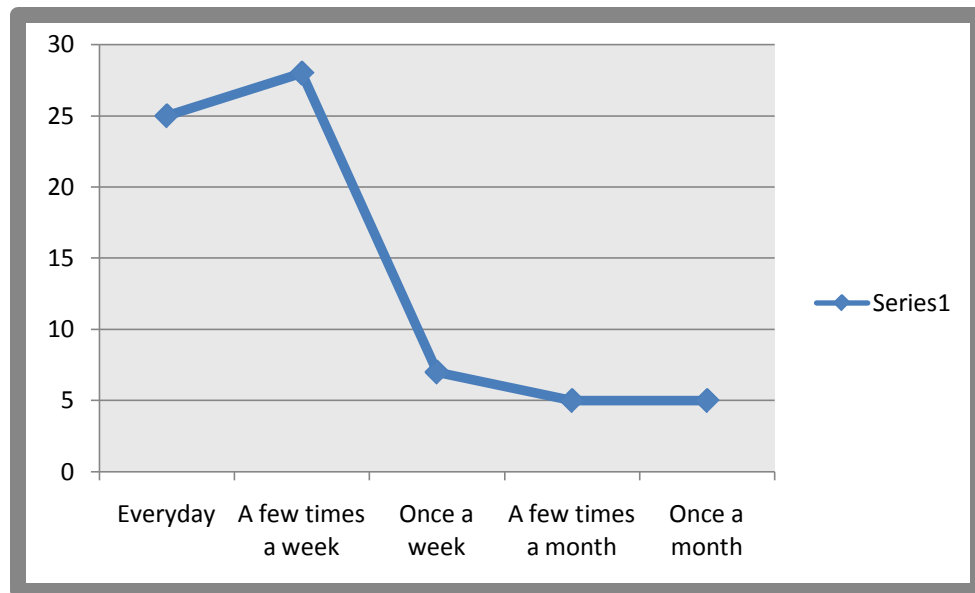


Figure -4.5: Frequency of Using ICT

Reasons for Limited Access to ICT by Students in Department:

Figure 4.6 reveals that approximately 7% of students said they were not granted access to the lab outside class periods. The insufficient time in labs (3%) and the lack of infrastructure (10%) were other reasons mentioned by students as hindering their access to ICT in departments. It is clearly seen that there is lack of infrastructure in the Arts Faculty, and department does not grant access to ICT, are the main reasons for not using ICT.

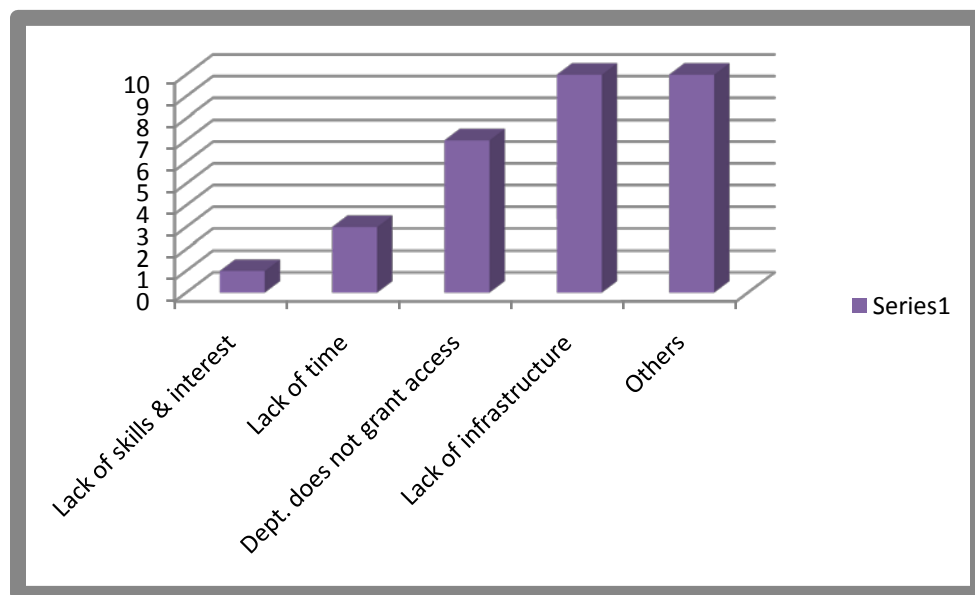


Figure 4.6: reasons for limited access to ICT

Student Access to ICT at Home and Outside the Department or Home

It is found through analysis that a number of students have access to ICT at home (21%). On the other hand 39% access was outside the department and home. whereas cybercafés remain the major point of access to ICT by students (28%), as indicate in this table.

Other students' access to ICT?	ISLM (20)	Urdu (20)	Sanskrit (20)	Pali (20)	Islamic Studies (20)	Total No (100)
Access to computers at home?	3	5	3	10	10	21 (21%)
Access to computers outside department or home?	14	4		11	11	39 (39%)
Access to ICT outside school or home						
Cybercafé	5	4	9	10	10	28 (28%)
Friend's place	6	3	4	6	6	19 (19%)
Private training centers	0	0	1	2	2	3 (3%)
Others	3	0	0	4	4	7 (7%)

Table-4.8: Students Access to ICT

Students' Access to the Internet in Department

The question is framed in such a way that the extent of using internet in the Arts faculty can be find out. The results reveal that 40% students use internet sometimes in their department, 26% of them use internet very rarely and 15% use it very often. Only 3% use internet during class period. 16% students said that they haven't internet facility in their department. Thus it is prove that ICT resources are not available in all departments of Arts Faculty

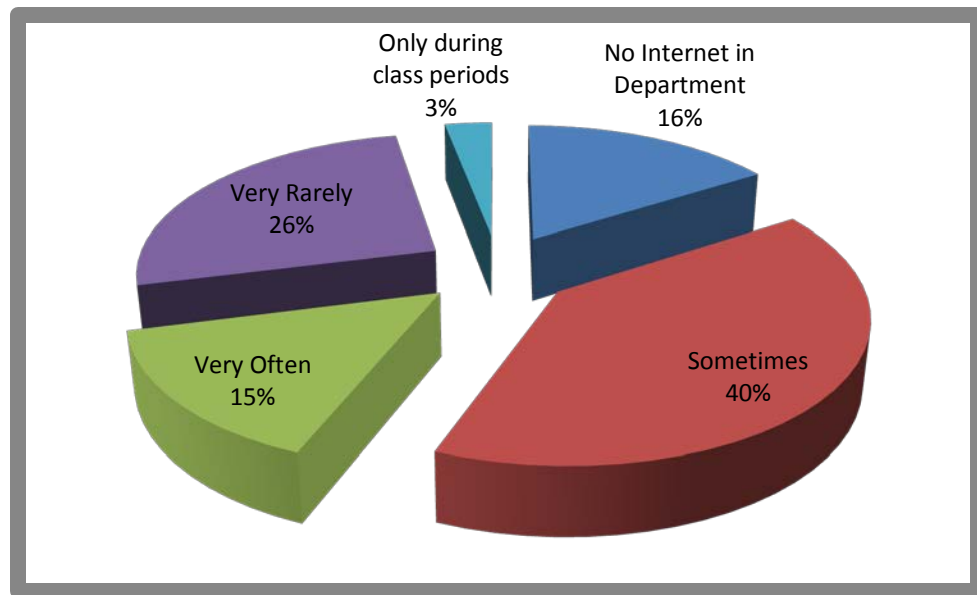


Figure 4.7: Students' Access to the Internet in Department

Use of E-mail and Internet

	ISLM (20)	Urdu (20)	Sanskrit (20)	Pali (20)	Islamic Studies (20)	Total No (100)
Have an e-mail account	20	16	17	16	15	84 (%)
Where do you read your mails?						
Home	18	5	10	3	5	41(%)
Department	4	2	7	1	1	15 (%)
Cybercafes	-	1	1	2	1	5 (%)
Friends	-	2	2	4	-	8 (%)
Mobile phone	4	11	5	13	8	41 (%)
Primary activity on the Internet						
E-mail	8	3	1	3	2	17(%)
Searching for information	14	11	10	7	13	55(%)
Training and course material	4	2	2	1	2	11 (%)
Facebook/chat etc.	12	11	9	15	7	54(%)
Online Games	-	2	1	1	-	4 (%)

Table 4.9: Use of E-mail and Internet

The table-4.9 show that majority the students interviewed in department with internet access had an e-mail account, which was 84% and the most preferred place of access to e-mail was the mobile phone (41%). It also reveals that the primary activity on the internet for most students is searching for information (55%).

Use Computer and USB flash

In order to ascertain the number of respondents to use USB flash, again the respondents were asked to for what purpose they use such technology. The analysis of the relevant data is presented in the following table.

	ISLM (20)	Urdu (20)	Sanskrit (20)	Pali (20)	Islamic Studies (20)	Total No (100)
Have USB flash	15	8	6	5	6	40 (%)
For what purpose?						
Store course materials and assignment	5	5	2	4	-	16 (%)
Internet Downloads	6	5	3	4	3	21 (%)
Data transfer only	9	1	3	4	3	20 (%)
Save and copy music	2	3	1	3	2	11 (%)
Others	1	2	2	3	1	9(%)
Where did you use computer for the first time?						
Home	10	8	2	7	8	35(%)
Department	4	0	1	0	1	6(%)
Cybercafes	3	6	7	1	6	23(%)
Friends	3	4	6	7	4	24(%)
Mobile phone	0	2	4	5	1	12(%)

Table 4.10: Use computer and USB flash

The above table shows that about 40% students have used USB flash and their major purpose was data transfer only which was 20%. 35% of students use computer at home for the first time.

Have Computer Laboratory in the Department:

	ISLM (20)	Urdu (20)	Sanskrit (20)	Pali (20)	Islamic Studies (20)	Total No (100)
Have computer laboratory in the Department?	✓	✓	✓	x	✓	

Table 11: Computer Laboratory in the Department

Another effort was made to assess how many departments have computer laboratory in the Faculty of Arts. Only 4 departments have laboratory, which indicate the lack of ICT resources.

Primary Reasons for Using computer

In order to ascertain the number of respondents to use computer, again the respondents were asked the reasons they use such technology. The analysis of the relevant data is presented in the figure 8. That reveals only 28% students use computer as learning and research tool. There is lack of ICT competence in Arts Faculty students.

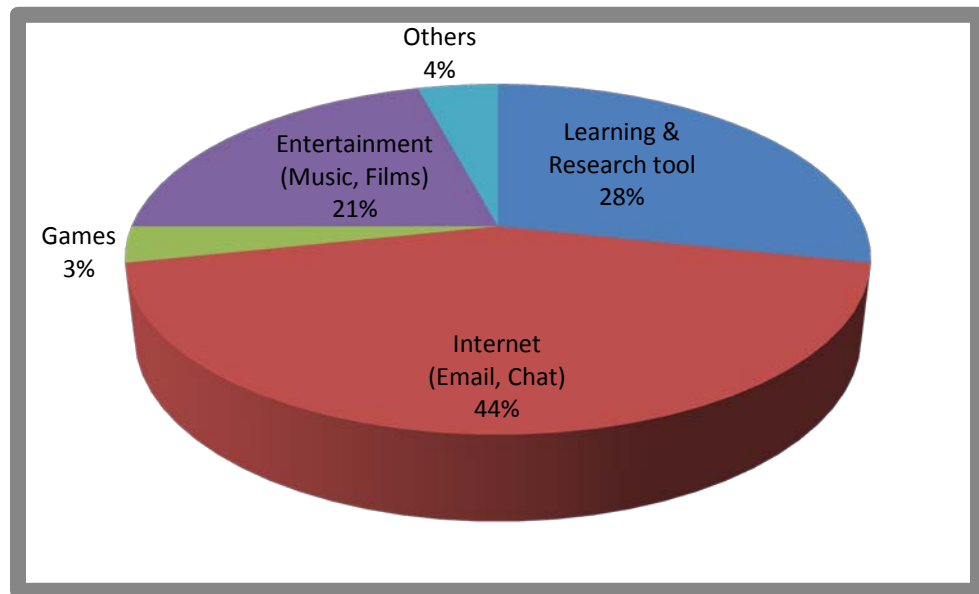


Figure 4.8:Primary Reasons for Using Computers

Share Computer with Other Students During Lab Classes

This following pie chart illustrate that students of all departments admitted sharing computers. 27% students of Sanskrit department share computer during lab class, it is followed by 25% students of Urdu and ISLM department. Only 3% students share computer from Pali and Buddhist studies department and 17% from Islamic Studies Department, also indicated the lack of resources.

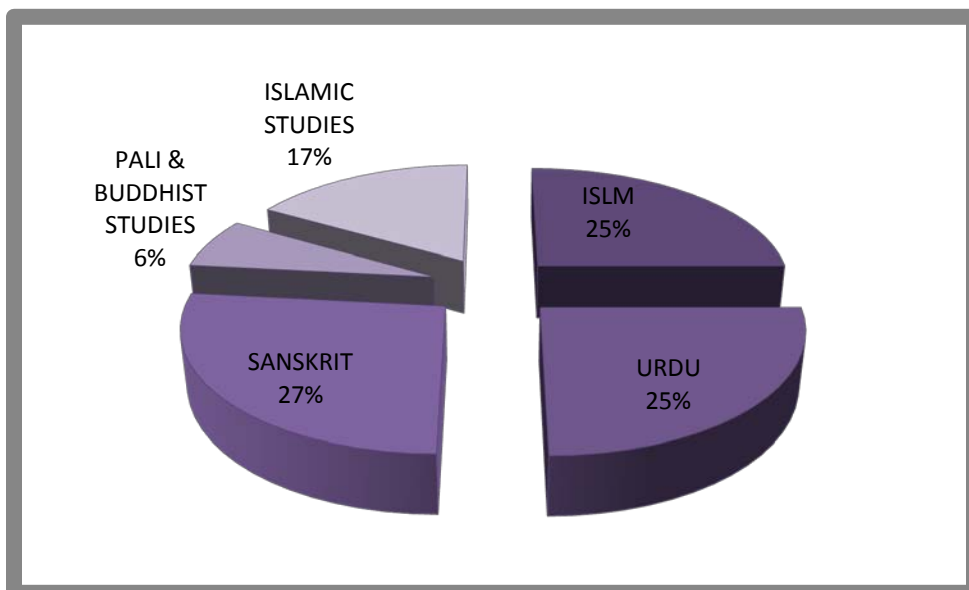


Figure-4.9:Share computer with other students during lab classes

Number of Students Sharing a Computer During Classes:

It is felt necessary to ascertain the ratio of students sharing computers during their lab class. The number is almost proportional to the student-to-computer ratio in the department: 9 in department 1; 36 in department 2; 13 in department 3; 1 in department 4 and 5 in department 5.

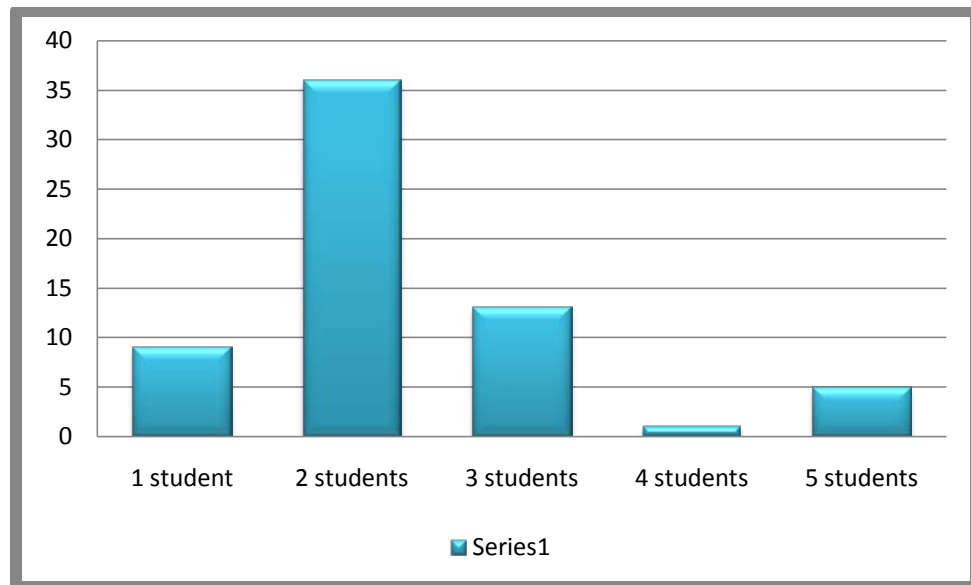


Figure-4.10: Number of Students Sharing a Computer During Classes

Summary and Conclusion

It is significantly mentioned that, recently University Grants Commission (UGC) of Bangladesh has taken an initiative to modernization of classrooms under the grants from World Bank with the assistance of “Higher Education Quality Enhancement Project (HEQEP).according to this initiative in Dhaka University all the Departments of Arts Faculty have modernized with multimedia projector. Though all departments haven’t yet started using multimedia projector due to lack of technical support.

In this chapter, the major results obtained through the data-collection instruments have been presented. Specific instances were provided to indicate where supporting data were gathered. Emphasis was placed on the key components of ICT development in Departments. However, these instances are simply examples limited to the case study, and a full set of all the possible results might be beyond the scope of this study.

CHAPTER 5

Problems and Prospects of Using ICT

Chapter 5

Problems and Prospects of Using ICT

Within a very few years, Information and Communication Technology (ICT) has turned out to be an effective educational technology which promotes some dramatic changes in teaching and learning processes. Technologies allow students to work more productively than in the past, but the teacher's role in technology- rich classrooms is more demanding than ever. ICT has the potential to transform the nature of education (improving teachers' design work, enhancing the roles of students and teachers in the learning process and helping to create a collaborative learning environment, etc). Although ICT has the potential to improve the educational system to a great extent, developing countries are far from reaping these benefits because of certain barriers.

5.1 Barriers to the Integration of ICT into Higher Education: The Example of Dhaka University

Several problems impede the integration of ICT into the curriculum of departments of Faculty of Arts, University of Dhaka actually the university curriculum of Bangladesh. Some of these are discussed below:

i. Lack of Initiative:

absence of academic information technology integration initiatives from the University Grants Commission of Bangladesh.

ii. Administrative Complexity:

Administrative complexity in integrating information technology into the university curriculum and as a whole its introduction in the national level.

iii. Lack of ICT Supported Infrastructure and Resources:

In Dhaka University there is lack the resources and appropriate infrastructure for implementing ICT in education. The effective use of ICT would require the availability of equipment, supplies of computers and their proper maintenance including other accessories. Implementing ICT demands other resources, such as computers, printers, multimedia projectors, scanners, etc - which are not available in all the departments in the Arts Faculty. Besides, ICT requires up-to-date hardware and software. Using up-to-date hardware and software resources is a key feature in the diffusion of technology. High-speed internet connection is another prerequisite for integrating ICT into the teaching-learning situation. But unfortunately internet access is very poor in the Faculty of Arts.

iv. Lack of Access to ICT:

The previous chapter points out the evidence that in the Arts faculty there are different kinds of access problem to ICT i.e. lack of resources poor quality of resources etc.

v. Insufficient Funds

Effective implementation of technology into education systems involves substantial funding, that is very hard to manage. ICT-supported hardware, software, internet, audio visual aids, teaching aids and other accessories demand huge funds. Many scholars proposed that the lack of funds to obtain the necessary hardware and software is one of the reasons teachers do not use technology in their classes. Efficient and effective use of technology depends on the availability of hardware and software and the equity of access to resources by teachers, students an administrative staff. These costs are in most cases inflated and cannot be provided by most departments, in the Arts Faculty.

vi. Lack of Knowledge and Skill

The success of educational innovations depends largely on the skills and knowledge of teachers. Teachers' lack of knowledge and skills is one of the main hindrances to the use of ICT in education for the University of Dhaka. Integrating technology in the curriculum requires knowledge of the subject area, an understanding of how students learn and a level of technical expertise. It is also found from the previous chapter, that the faculty's belief in their computer competence was the greatest predictor of their use of computers in the classroom. Therefore, lack of knowledge regarding the use of ICT and lack of skill on ICT tools and software have also limited the use of ICT tools in teaching learning situation in the faculty of Arts.

Vii Teachers' Attitudes and Beliefs about ICT

As indicated in the previous chapter, Teachers' attitudes have been found to be major predictors of the use of new technologies in instructional settings. Teachers' beliefs about teaching and learning with ICT are central to integration. It is also found that teachers with negative computer attitudes were less skilled in computer use and were therefore less likely to accept and adapt to technology than those with positive attitudes.

viii Lack of Time

This study reported lack of time as one of the biggest constraints to the integration of ICT into the teaching- learning situation. Teachers need time to learn how to use the hardware and software, time to plan, and time to collaborate with other teachers. Teachers also need time to develop and incorporate technology into their curriculum. Some teachers are unable to make appropriate use of technology in their own classrooms, while others are unwilling to try because of anxiety, lack of interest, or lack of motivation .

ix. Lack of Proper Planning and Decisive Management

Proper ICT planning is essential to effective ICT integration. Chapter four have pointed out that in most of the departments of the Arts Faculty are far away from implementing ICT into teaching and learning situations, effectively due to lack of a proper vision and plan. So ICT integration is clearly related to actions taken at the university level, such as the development of an ICT plan, ICT support, and ICT training which is absent at most of the departments.

x. Resistance to Change and Negative Attitude

In teaching profession generally there is an inherent resistance to change, and that is the another barrier to some teachers' use of new technologies in education.

The research question no. iv. (“What factors hinder ICT integration in Arts Faculty of Dhaka University?”) of the study have been reflected through the above discussion of this chapter.

Other Barriers to ICT Implementation

Although the University of Dhaka is committed to implementing ICT in education, the process is hindered by some other barriers, bring out through the close observation during field work. These barriers negatively influence the use of ICT in education is mentioned below:

- Age differences
- Gender difference
- No perception of benefits
- Unreliability of equipment,
- Political Factors
- Social and Cultural Factors
- Corruption
- Low level of national and international integration
- Lack of government support and initiatives
- Lack of awareness program regarding the importance of information technology at the national level.
- Absence of systematic management support
- Shortage of personnel
- Lack of professional development training for the faculty members
- Shortage of budget

5.2 Prospects of ICT in Arts Faculty of Dhaka University

In recent times, several factors have emerged which have strengthened and encouraged moves to adopt ICTs into classrooms and learning settings in the faculty of Arts in Dhaka University. These have included a growing need to explore efficiencies in terms of program delivery, the opportunities for flexible delivery provided by ICTs; the capacity of technology to provide support for customized educational programs to meet the needs of individual learners; and the growing use of the Internet and WWW as tools for information access and communication.

As we move into the 21st century, these factors and many others are bringing strong forces to bear on the adoption of ICTs in education of Dhaka University and contemporary trends suggest we will soon see large scale changes in the way education is planned and delivered as a consequence of the opportunities and affordances of ICT.

1. The Support of ICT on What is Learned

Conventional teaching has emphasized content. For many years course have been written around textbooks. Teachers have taught through lectures and presentations interspersed with tutorials and learning activities designed to consolidate and rehearse the content. Contemporary settings are now favoring curricula that promote competency and performance.

2. Competency and Performance-Based Curricula

The moves to competency and performance-based curricula are well supported and encouraged by emerging instructional technologies . Such curricula tend to require:

- access to a variety of information sources;
- access to a variety of information forms and types;
- student-centered learning settings based on information access and inquiry;

- learning environments centered on problem-centered and inquiry-based activities;
- authentic settings and examples; and
- teachers as coaches and mentors rather than content experts.

Contemporary ICTs are able to provide strong support for all these requirements. For many years, Dhaka university teachers wishing to adopt such curricula have been limited by their resources and tools but new technologies will continue to drive these forms of learning further. As students and teachers gain access to higher bandwidths, more direct forms of communication and access to sharable resources, the capability to support these quality learning settings will continue to grow.

3. Information Literacy

There has emerged a need for educational institutions to ensure that graduates are able to display appropriate levels of information literacy, “the capacity to identify and issue and then to identify, locate and evaluate relevant information in order to engage with it or to solve a problem arising from it”. The drive to promote such developments stems from general moves among institutions to ensure their graduates demonstrate not only skills and knowledge in their subject domains but also general attributes and generic skills. The growing use of ICTs as tools of everyday life have seen the pool of generic skills expanded in recent years to include information literacy and it is highly probable that future developments and technology applications will see this set of skills growing even more.

4. The Support f ICT on How Students Learn

Just as technology is influencing and supporting what is being learned in universities, so too is it supporting changes to the way students are learning. Moves from content-centered curricula to competency-based curricula are associated with moves away from teacher centered forms of delivery to student-centered forms. Through technology-facilitated approaches, contemporary learning settings now encourage students to take responsibility for their own learning. Students have been trained to let others present to them the

information that forms the curriculum. The growing use of ICT as an instructional medium is changing and will likely continue to change many of the strategies employed by both teachers and students in the learning process.

5. Student-Centered Learning

Technology has the capacity to promote and encourage the transformation of education from a very teacher directed enterprise to one which supports more student-centered models. Evidence of this today is manifested in:

- The proliferation of capability, competency and outcomes focused curricula
- Moves towards problem-based learning
- Increased use of the Web as an information source, Internet users are able to choose the experts from whom they will learn

Students using ICTs for learning purposes become immersed in the process of learning and as information sources and cognitive tools, the influence of the technology on supporting how students learn will continue to increase.

6. Supporting Knowledge Construction

The emergence of ICTs as learning technologies has coincided with a growing awareness and recognition of alternative theories for learning. The theories of learning that hold the greatest sway today are those based on constructivist principles. These principles posit that learning is achieved by the active construction of knowledge supported by various perspectives within meaningful contexts. In constructivist theories, social interactions are seen to play a critical role in the processes of learning and cognition. Contemporary learning theory is based on the notion that learning is an active process of constructing knowledge rather than acquiring knowledge and that instruction is the process by which this knowledge construction is supported rather than a process of knowledge transmission.

7. The Impact of ICT on When and Where Students Learn

In the past educational institutions have provided little choice for students in terms of the method and manner in which programs have been delivered. Students have typically been forced to accept what has been delivered and institutions have tended to be quite staid and traditional in terms of the delivery of their programs. ICT applications provide many options and choices and many institutions are now creating competitive edges for themselves through the choices they are offering students. These choices extend from when students can choose to learn to where they learn.

8. Any Place Learning

Today, many more students is able to make this choice through technology-facilitated learning settings who were unable to attend campuses,. The scope and extent of this activity is demonstrated in some of the examples below.

- In many instances traditional classroom learning has given way to learning in work-based settings with students able to access courses and programs from their workplace.
- The communications capabilities of modern technologies provide opportunities for many learners to enroll in courses offered by external institutions rather than those situated locally.
- The freedoms of choice provided by programs that can be accessed at any place are also supporting the delivery of programs with units and courses from a variety of institutions,

These activities provide considerable diversity and choice for students in the programs they complete.

9. Anytime Learning

Students are starting to appreciate the capability to undertake education anywhere, anytime and anyplace.

- Through online technologies learners are free to participate in learning activities when time permits and these freedoms have greatly increased the opportunities for many students to participate in formal programs.
- The wide variety of technologies that support learning are able to provide asynchronous supports for learning so that the need for real-time participation can be avoided while the advantages of communication and collaboration with other learners is retained.
- As well as learning at anytime, teachers are also finding the capabilities of teaching at any time to be opportunistic and able to be used to advantage.

The continued and increased use of ICTs in education in years to come, will serve to increase the temporal and geographical opportunities that are currently experienced.

10. Emerging Issues

A number of other issues have emerged from the uptake of technology whose impacts have yet to be fully explored. These include changes to the makeup of the teacher pool, changes to the profile of who are the learners in our courses and paramount in all of this, changes in the costing and economics of course delivery.

11. Expanding the Pool of Teachers

In the past, the role of teacher in an educational institution was a role given to only highly qualified people. Through the affordances and capabilities of technology, today we have a much expanded pool of teachers with varying roles able to provide support for learners in a variety of flexible settings. This trend seems set to continue and to grow with new ICT developments and applications. And within this changed pool of teachers will

come changed responsibilities and skill sets for future teaching involving high levels of ICT and the need for more facilitative than didactic teaching roles

12. Expanding the Pool of Students

In the past, education has been a privilege and an opportunity that often was unavailable to many students whose situation did not fit the mainstream. Through the flexibilities provided by technology, many students who previously were unable to participate in educational activities are now finding opportunities to do so. The pool of students is changing and will continue to change as more and more people who have a need for education and training are able to take advantage of the increased opportunities.

13. The Cost of Education

Traditional thinking has always been that technology-facilitated learning would provide economies and efficiencies that would see significant reductions in the costs associated with the delivery of educational programs. The costs would come from the ability to create courses with fixed establishment costs, for example technology-based courses, and for which there would be savings in delivery through large scale uptake.

14. Stakeholders and Influences

While ICTs may not have had a large impact to date, their use will grow to play a significant role in many aspects of the design, development and delivery of educational programs in the coming years. When the future of education is considered in this way, it is interesting to speculate among the stakeholders, for whom the change will be the greatest.

15. Supporting Pre- and In- Service Teacher Education

Teacher education using new ICTs are increasingly becoming popular because of the possibilities of the ‘multiplier effect’, greater interactivity between students and tutor, opportunities for learners to proceed at their own pace , at any place and at any time, the possibilities of combining video, audio and texts to improve delivery and quality of instruction and finally the possibilities of establishing teacher resource centers with access to power and telecommunications equipped with computers and Internet facilities.

16. Enhancing Educational Management

In this area new ICTs are more relevant. Computer software programs are being used in time tabling and school management to improve the use of staff time, student time and space, thus reducing costs significantly. Only a few computers are necessary for this type of application. It is noted that ICTs in Dhaka University can improve quality with less cost. Old ICTs are still cost-effective for provision of education in developing countries. New ICTs have a very large potential for teacher education in larger quantity and better quality. A combination of old ICTs to widen coverage and access and new ICTs to provide interactivity is supposed to be cost-effective for teacher education.

The aim of this chapter is to present a comprehensive review of barriers encountered when introducing ICT into classrooms. This review will help identify the factors that influence teachers’ decisions whether or not to implement ICT in teaching-learning situations. Connections will be made with existing literature to explore possible barriers for introducing ICT into education in Bangladesh. Further, this chapter also offers a number of prospects to maximize the beneficial use of ICT on education.

CHAPTER 6

Recommendations and Conclusion

CHAPTER 6

Recommendations and Conclusion

6.1 Recommendations

Based on the whole study as well as problems for using ICT at the faculty of Arts in Dhaka University, the researcher has made a set of recommendations or action plans to overcome the barrier hindered in the higher education. Hope that the recommendations will help the concerned authorities and government to formulate and increase plans and policies to implement ICTs in the Arts Faculty of Dhaka University.

1. Formation of ICTCI Taskforce

University authority should urgently form Information Communication and Technology Curriculum Integration (ICTCI) task force. This task force will work dedicatedly for the successful and effective ICT integration into the university curriculum.

2. Adequate Technical Infrastructure

University authority should ensure availability of adequate technical infrastructure (e.g. hardware, software, Internet access) in every departments of the respective university.

3. Financial Support

Institutions of higher education should diversify sources of funds to have a wide financial base. The issue of shortage of technology equipment, especially computers, posed a tremendous problem. Given the fact that technology is very expensive and, as pointed out earlier, the government cannot fully support the universities, the universities should seek ways to complement what funds they do receive from the government. Dependency on foreign donors has its limits and conditions that may not be favorable to the institutions. In that regard, Kajuna (2009) recommends the establishment of partnerships with local people and organizations, who are also stakeholders. These partners may include parents, alumni,

business companies, Governmental Organizations (GOs), and Nongovernmental Organizations (NGOs). In some cases, the partnership may be done in exchange for expertise of the university. In line with this, the university may establish the technology fund, and the technology committee may find ways of mobilizing the general public to contribute to this fund or organize fundraising events. Priority should be given to the acquisition of more computers and teachers' professional development programs.

4. Cooperate with Teaching Staff

Dean, Faculty of Arts should support teaching staff in their efforts to design teaching methods that suit different types of learning styles with ICT.

5. Support to Integrate ICT

University Grants Commission (UGC) of Bangladesh should take bold initiative in directing the higher educational institutions to integrate ICT in the curriculum by providing financial and other support to integrate ICT at the initial stage

6. Promote ICT Activities

Government should form National Information and Communication Technology Curriculum Integration (NICTCI) task force to promote ICT activities at the national level as well as to monitor national ICT activities.

7. Teachers' ICT Competence

UGC should organize national and international seminars, conferences, symposiums, short trainings on ICT to ensure ICT skills of teachers and students of various universities of Bangladesh.

8. Allocate Sufficient Budget

Government should allocate sufficient fund to implement ICT activities at the national level.

9. Administrative and Technical Support

University authority should offer sufficient administrative and technical support services for teachers and learners.

10. Proper Planning and Decisive Management

Proper planning and decisive management is a must in implementing and integrating ICT at the national level and into the university curriculum of Bangladesh.

Further Points to Consider

Researcher also suggests the following recommendations for improving on the current situation:

i. Awareness of Stakeholders and Authorities:

Effective implementation of ICT in education requires commitment from the government of Bangladesh, administrators, teachers, parents, students, and the community. That is, all the stakeholders and responsible authorities including teachers and other staff should be aware of the importance of technology in developing student's learning and should strive to overcome the barriers which prevent the use of technology in classroom settings, so that students can benefit effectively from this ICT.

ii. Adequate Resources:

The stakeholders and university authorities need to be provided with adequate facilities and resources for effective implementation of ICT.

iii. Develop Educational Software Program:

Local software companies should be encouraged to work together with teachers to produce educational software programs suitable for the teachers and students. In this regards Mumtaz (2000) states that software designers and teachers should work together and observe critically how a range of teachers teach in the classroom and how appropriate

forms of software supporting different skills and ways of teaching and learning can be better developed for teachers to use in subject teaching.

iv. Teachers' Professional Development :

Moreover, effective implementation of ICT in educational institutions of Bangladesh largely depends on teachers and principals, who require in-depth professional development due to lack of knowledge and skills. Vigilant attention needs to be given to in-service teacher training for both teachers and principals and pre-service training for newly appointed teachers before joining the regular classes to acquaint them with the important role of technology in schools settings and to train them on how to prepare and use ICT competently.

v. Positive Attitude of Teachers' towards ICT:

To implement computers in the classroom, teachers should feel confident and comfortable using computers, through the use of computers on a consistent basis for instructional activities. Teachers must understand the value of computing in education to be able to benefit their students and to support meaningful learning (Novak 1998). So changing teachers' negative attitudes is essential for increasing their computer skills. Therefore, if teachers want to successfully use technology in their classes, they need to possess a positive attitude to the use of technology. Such an attitude is developed when teachers are sufficiently comfortable with technology and are knowledgeable about its use (Harrison & Rainer, 1992; Afshari et al., 2009).

These suggestions are put forward which can be taken into considerations to integrate ICT into the university curriculum and to promote ICT activities at the national level.

6.1 Some Suggested ICT Development Models in Higher Education in Dhaka University

6.2.1 Models of Technology Integration

Without models, principles, and strategies, the challenge of integrating technology into the curriculum can be an overwhelming task with unpredictable results. Technology integration models are frameworks for how technology may be integrated in the classroom. In this part, two models that can be followed by the University of Dhaka to integrate ICT are discussed. They are Apple Computer's ACOT Stages of Development model (1995) and Ely's (1999) eight conditions for effective adoption of innovations.

These models and other factors necessary for technology integration can be used as a conceptual framework for evaluating technology integration at the Arts Faculty of Dhaka University

6.2.1.1 ACOT Stages of Development Model

A good number of technology integration models have been developed to investigate the process of implementing innovations. They have been developed in an attempt to describe the adoption process.

ACOT Stages of Development model is more focused on technology integration in the classroom. The model was developed from a ten-year project conducted by the United States Department of Education funded by Apple Computer Inc., from 1985 to 1995. The project was based on the question: What happens to students and teachers when they have access to technology whenever they need it? (Apple Computer, 1995, p. 8). The findings of the project indicated that teachers must go through the stages before they are able to fully integrate technology in their teaching. The stages are entry, adoption, appropriation, and invention.

Stage	Examples of What Teachers Do
Entry	Learn the basics of using new technology
Adoption	Use new technology to support traditional instruction
	Integrate new technology into traditional classroom practice. Here, they often focus on increased student productivity and engagement by using word processors, spreadsheets, and graphics tools
Appropriation	Focus on cooperative, project-based, and interdisciplinary work-- incorporating the technology as needed and as one of many tools.
Invention	Discover new uses for technology tools, for example, developing spreadsheet macros for teaching algebra or designing projects that combine multiple technologies

Figure 1: ACOT Stages of Development. (Apple Computer, 1995, p. 16.)

The ACOT Stages of Development model explains what the teachers go through as they integrate technology into classroom teaching. The stages may strongly indicate the level of technology integration by students and the institution as a whole. They may also help as a guide for the steps to be taken by the institution to evaluate and improve on the processes of technology integration.

6.2.1.2 Ely's Eight Conditions for Implementing Educational Technology Innovations

Apart from the models, other scholars have suggested conditions that must be present if the process of using technology is likely to be successful. One of those scholars that have caught the attention of many people in the field of technology integration is Donald Ely. Ely (1999) suggested eight conditions that must exist or be made available for adoption of an educational innovation to take place. These conditions are:

1. **Dissatisfaction with the status quo.** This is the condition of the implementers when they feel that change is required. It is the situation when they are dissatisfied with what is currently available. Ely (1999) says that this emotional state may be inert or induced and it is linked to leadership. So, if we understand what causes dissatisfaction and the extent of the dissatisfaction, we can help change it, and it would be easier to communicate innovations to the adopters.
2. **Presence of sufficient knowledge and skills.** Ely (1999) says that it is especially evident when the innovation involves use of a certain tool or a technique. People who will be involved in the implementation of innovation must possess knowledge, technical knowledge, and skills to be able to effect change.
3. **Availability of resources.** This refers to appropriate and adequate resources to be available and accessible to the users. According to Ely (1999), the resources include hardware, software, publications, audiovisual, and other teaching materials. This means the institutions must provide the required resources to support the use of technology in teaching and learning.
4. **Availability of time.** The adoption of the innovation takes time and is a long process. Ely (1999) states that, "the implementers must have time to learn, adapt, integrate, and reflect on what they are doing" (p. 4).
5. **Reward or incentives.** It is natural that people need to be encouraged, recognized and appreciated for their performance. Ely (1999) says that it serves as a stimulus to move an

individual to action. In his study, however, he found that rewards and incentives were of less importance than other conditions.

6. Participation. According to Ely (1999), participation means shared decision making and communication among all parties. These decisions involve planning and design of the innovation.

7. Commitment. Innovations take time and involve numerous activities. Ely (1999), states that commitment is measured by the perceptions of implementers. According to Ely, commitment is linked with leadership, resources, time, and reward and incentives.

8. Leadership is evident. Ely (1999) states that this condition includes providing support and encouragement to users, as well as role modeling in the use of the innovation.

The two models discussed above may be used to examine and evaluate the status of technology integration in the Arts faculty of Dhaka University.

6.3 LIMITATIONS OF THE STUDY

No research project is without limitations: “There is no such thing as a perfect designed study” (Marshall & Rossman, 1999, p. 42). The following are the limitations of the study. These are the factors that, in one way or another, may have affected the outcome of the study.

1 The findings here are the outcomes of considering the answers that the participants indicated or said in relation to their use of ICT; and the only verification of such data was made by matching data from different categories of respondents. For example, the self-perceived “ICT-literate” from teachers could have been understood as merely having once used a computer.

2 ICT integration in higher education is clearly a complex issue, being influenced by numerous factors at macro-level (National policies, etc.) or micro-level (individual level). The focus in this study was limited to factors at the university level that would allow

university to complete the early stage of ICT integration and move to the university level: the integration stage.

3 the pronounced lack of ICT infrastructure in the various schools investigated, this study, therefore, did not attempt to address how effectively ICT was being used. Rather, the aim has simply been to gain insights into the current status of ICT in the schools, as well as the factors that would influence, promote, and constrain the use of ICT. This study does not guarantee that under optimal infrastructural conditions, the effective use of ICT in teaching would automatically be met.

6.4 Future Course of Work

The present world is fully depends on new and advanced Information and Communication Technologies. Bangladesh cannot ignore this trend in any way. Dhaka University is the foundation of country's higher education. It's role in spreading higher education is immense. But Dhaka University cannot implement ICT into higher education without using up-to-date and sophisticated technologies. Here, more study should conduct on the practical implementation of ICTs in higher education.

Recently University Grants Commission (UGC) of Bangladesh has taken an initiative to modernization of classrooms under the grants from World Bank with the assistance of "Higher Education Quality Enhancement Project (HEQEP).according to this initiative in Dhaka University all the Departments of Arts Faculty have modernized with multimedia projector. This initiative will be the prospect for the future research work.

6.5 Conclusion

Status of integration of ICT into the curriculum of the departments of Faculty of Arts is not satisfactory at all. Effective initiatives are required to integrate ICT in the curriculum of the departments not having ICT courses. It should be noted here that Faculty of Arts established a computer center named “Arts Computer Center” in 2001. The center has 13 computers at this moment used by the limited students of Faculty of Arts enrolled in the computer courses conducted by the center.

The adoption of ICT at universities is often poorly implemented and is based on unfounded optimism. This research has found serious obstacles to fully integrating technology into the teaching and learning processes in higher education. Technologies have great potential for knowledge dissemination, effective learning, and efficient education services. Yet, if the educational policies and strategies are not right, if ICT-in-education policies are not well thought out, and if the prerequisite conditions for using these technologies are not met concurrently, this potential will not be realized.

Government of Bangladesh pledged to convert Bangladesh into ‘Digital Bangladesh’ by 2021 which is the 50th anniversary of the independence of Bangladesh. Government has already taken a good number of programs to implement ICT related activates in almost all government sector as well as planning to spread ICT service to all. Government is planning to promote ICT infrastructure in all educational institutions. Though current ICT infrastructure of the public universities are not so praise worthy and still there are lack of concentration on ICT integration into the curricula. Without ensuring proper ICT facility for the university students who are considered the future of the nation and without making them ICT literate the dream to make Digital Bangladesh is far way.

References

- Al-Senaidi, S., Lin, L. & Poirot, J. (2009). Barriers to adopting technology for teaching and learning in Oman. *Computers & Education*, 53(3), 575-590.
- Asiatic Society of Bangladesh. (2006). *Banglapedia*. Retrieved March 06, 2010 from http://www.banglapedia.org/httpdocs/HT/C_0328.HTM
- Bangladesh Bureau of Statistics (BBS). (2005). *Household Income Expenditure Survey (Provisional)*. Dhaka.
- Barron, A. E., Orwig, G. W., Ivers, K. S. & Lilavois, N. (2001). *Technologies for education: A practical guide* (4th ed.). Greenwood Village, CO: Libraries Unlimited.
- Blankson, J. (2004). *The use of technology by faculty members at Ohio University*. Doctoral dissertation, College of Education of Ohio University.
- British Educational Communications and Technology Agency (Becta). (2004). *A review of the research literature on barriers to the uptake of ICT by teachers*. Retrieved March 05, 2010 from <http://research.becta.org.uk/index.php?section=rh&rid=13642>
- Ertmer, P. E. A. (1999). Examining teachers' beliefs about the role of technology in the elementary class- room. *Journal of Research on Computing in Education*, 32 (1), 54-72.
- Galanouli, D., Murphy, C., & Gardner, J. (2004). Teachers' perceptions of the effectiveness of ICT- competence training. *Computers & Education*, 43(1-2), 63-79.
- Haddad, W.D. (2007). ICT for education: Decision makers' essentials. Retrieved March 05, 2010 from [http://www.ictinedtoolkit.org/icttool/usere/pdfs/ICTs for Education Essentials.pdf](http://www.ictinedtoolkit.org/icttool/usere/pdfs/ICTs_for_Education_Essentials.pdf)
- Kajuna, L.W. (2009). *Implementation of technology integration in higher education: A case study of the University of Dar-es-Salaam in Tanzania*. Doctoral dissertation, College of Education of Ohio University.

Kok, A. (2006). *ICT integration into classrooms- A literature reviews*. Retrieved March 07, 2010 from http://www.eadl.org/documents/2006/ICT%20Integration%20into%20Classrooms_KOK.pdf

Lareki, A., Martínez de Morentin, J. I. & Amenabar. (2010). Towards an efficient training of university faculty on ICTs. *Computers & Education*, 54(2), 491-497.

Omwenga, E. I. (2005). *Pedagogical issues and e-learning cases: Integrating ICTs into teaching and learning process*. Retrieved January 10, 2008 from <http://iucea.org/downloads/5.%20Pedagogical%20Issues%20and%20eLearning%20Cases.doc>

Rahman, C. M. (2008). *IT education in Bangladesh*. Retrieved January 10, 2008 from http://www.sdnpsbd.org/sdi/issues/education/it_education_in_bangladesh.php

Taylor, P. (1998). Institutional change in uncertain times: Lone ranging is not enough. *Studies in Higher Education*, 23, 269–278.

Tinio, V.L. (2003). *ICT in education*. Retrieved January 10, 2008 from <http://www.apdip.net/publications/iespprimers/ICTinEducation.pdf>

UNESCO. (2002). *Information & communication technology in education: A curriculum for schools and program of teacher development*. France. University of Dhaka. (2008). *University of Dhaka prospectus*. Dhaka.

University of Dhaka. (2006-2007). *Annual report of the University of Dhaka*. Dhaka.

Bauer, J. & Kenton, J. (2005). Toward Technology Integration in the Schools: Why it isn't Happening. *Journal of Technology and Teacher Education*. 13(4), 519-546.

Deaney, R., Ruthven, K. & Hennessy, S. (2003). Pupil perspectives on the contribution of information and communication technology to teaching and learning in the secondary school. *Research Papers in Education*, 18(2), 141-165.

Doering, A., Hughes, J. & Huffman, D. (2003). Preservice teachers: Are we thinking with technology?. *Journal of Research on Technology in Education*, 35(3), 342-361.

Gibson, S. & Oberg, D. (2004). Visions and realities of Internet use in schools: Canadian perspectives. *British Journal of Educational Technology*, 35(5), 569–585.

Krentler, K. A. & Willis-Flurry, L. A. (2005). Does Technology Enhance Actual Student Learning? The Case of Online Discussion Boards. *Journal of Education for Business*, July/August, 316-321.

Mayo, N. B., Kajs, L. T. & Tanguma, J. (2005). Longitudinal Study of Technology Training to Prepare Future Teachers. *Educational Research Quarterly*, 29(1), 3-15.

Odabasi, F. (2000). Faculty use of technological resources in Turkey. *Innovations in Education and Training International*, 37(2), 103-107.

Painter, S. R. (2001). Issues in the observation and evaluation of technology integration in K-12 classrooms. *Journal of Computing in Education*, 17(4), 21-25.

Reynolds, D., Treharne, D. & Tripp, H. (2003). ICT – the hopes and the reality. *British Journal of Educational Technology*, 34(2), 151-167.

Robyler, M. D. (2003). *Integrating educational technology into teaching* (3rd ed.). USA: Pearson Education, Inc. Rosenfeld, B. & Martinez-Pons, M. (2005). Promoting Classroom Technology Use. *The Quarterly Review of Distance Education*, 6(2), 2005, 145–153.

Staples, A., Pugach, M. C. & Himes, D. (2005). Rethinking the Technology Integration Challenge: Cases from Three Urban Elementary Schools. *Journal of Research on Technology in Education*, 37(3), 285-311. Tomei, L. A. (2005). *Taxonomy for the Technology Domain*. USA: Information Science Publishing.

Pelgrum, W. J. (1999). Infrastructure. In W. J. Pelgrum & R. E. Anderson (Eds.), *ICT and the emerging paradigm for life long learning*. Amsterdam: IEA.

Pelgrum, W. J. (2001). Obstacles to the integration of ICT in education: results from a worldwide educational assessment. *Computers and Education*, 37 pp.163-178.

Albaugh, P. (1997). The role of skepticism in preparing teachers for the use of technology. 'Education for community': a town and gown discussion panel, Westerville, OH, January 26, 1997.

Besa (2002). ICT in UK State Schools 2002: A summary report.

<http://www.besonet.org.uk/ict2002/summary.htm>.

Becta (2003). Primary schools – ICT and Standards. An analysis of national data from Ofsted and QCA by Becta. Coventry: Becta.

<http://www.becta.org.uk/research/research.cfm?section=1&id=538>

Bosley, C., Moon, S. (2003). Review of existing literature on the use of Information and Communication Technology within an educational context. Derby: Centre for Guidance Studies, University of Derby.

Bradley, G., Russell, G. (1997). Computer experience, school support and computer anxieties. *Educational Psychology*, 17 (3), pp.267-284.

Butler, D., Sellbom, M. (2002). Barriers to adopting technology for teaching and learning. *Educase Quarterly*, 25 (2), pp.22-28.

Cox, M., Preston, C., Cox, C. (1999). What factors support or prevent teachers from using ICT in the primary classroom. Paper presented at the British Educational Research Association Annual Conference. University of Sussex at Brighton. (September 2-5 1999).

<http://www.leeds.ac.uk/educol/documents/00001304.htm>.

Cuban, L. (1999). The technology puzzle. *Education Week*, 18 (43).

<http://www.edweek.org/ew/vol-18/43cuban.h18>

Cuban, L., Kirkpatrick, H., Peck, C. (2001). High access and low use of technologies in high school classrooms: explaining an apparent paradox. *American Educational Research Journal*, 38 (4), pp. 813 – 834.

Dawes, L. (2000). The National Grid for Learning and the professional development of teachers: outcomes of an opportunity for dialogue. PhD thesis.

DFES (2002). Statistics of education. School workforce in England (2002 edition). London: TSO. Ertmer, P.E.A. (1999). Examining teachers' beliefs about the role technology in the elementary classroom. *Journal of Research on Computing in Education*, 32 (1), pp.54-72.

Granger, C., et al.. (2002). Factors contributing to teachers' successful implementation of IT. *Journal of Computer Assisted Learning*, 18 pp.480-488.

Guha, S. (2000). Are we all technically prepared? Teachers' perspectives on the causes of comfort or discomfort in using computers at elementary grade teaching. Paper presented at the Annual Meeting of the National Association for the Education of Young Children Atlanta, GA, November 8-11, 2000.

Harrison, C., Comber, C., Fisher, T., Haw, K., Lewin, C., Lunzer, E., McFarlane, A., Mavers, D., Scrimshaw, P., Somekh, B., Watling, R. (2002). ImpaCT2: The impact of information and communication technologies on pupil learning and attainment. *ICT in Schools Research and Evaluation Series*, No. 7, DfES/Becta.

http://www.becta.org.uk/page_documents/research/ImpaCT2_strand1_report.pdf

Kirkwood, M., Van Der Kuyl, T., Parton, N., Grant, R. (2000). The New Opportunities Fund (NOF) ICT training for teachers programme: Designing a powerful online learning environment. Paper presented at the European conference on educational research. Edinburgh, 20-23 September.

Larner, D., Timberlake L. (1995). Teachers with limited computer knowledge: variables affecting use and hints to increase use. The Curry School of Education, University of Virginia.

Lee, D. (1997). Factors influencing the success of computer skills learning among in-service teachers. *British Journal of Educational Technology*, 28 (2), pp.139-141.

Manternach-Wigans, L., et al.. (1999). Technology integration in Iowa high schools: perceptions of teachers and students. College of Education, Iowa State University.

Mumtaz, S. (2000). Factors affecting teachers' use of information and communications technology: a review of the literature. *Journal of Information Technology for Teacher Education*, 9 (3), pp.319-341.

Murphy, C., Greenwood, L. (1998). Effective integration of Information and Communications Technology in teacher education. *Journal of Information Technology for Teacher Education*, 7 (3), pp.413-429.

Ofsted (2001). *ICT in Schools: the impact of Government initiatives: An interim report*, April

2001. London: Office for Standards in Education.

<http://www.ofsted.gov.uk/publications/docs/1043.pdf>.

Ofsted (2002). ICT in Schools: effect of Government initiatives: Progress report, April 2002. <http://www.ofsted.gov.uk/publications/docs/19.pdf>.

Pina, A., Harris, B. (1993). Increasing teachers' confidence in using computers for education. Paper presented at the Annual Meeting of the Arizona Educational Research Organisation (Tucson, AZ, November 1993).

Preston, C., Cox, M., Cox, K. (2000). Teachers as innovators: an evaluation of the motivation of teachers to use Information and Communications Technology.

Miranda Net Price Waterhouse Coopers (2001). Teacher workloads study: Interim report for the DFES.

Robertson, S., Caldert, J., Fung, P. (1996). Pupils, teachers and palmtop computers, Journal of computer assisted learning, 12 pp.194-204

Ross, J., Hogaboam-Gray, A., Hannay, L. (1999). Predictors of teachers' confidence to implement computer-based instruction. Journal of Educational Computing Research, 21 (1), pp.75-97.

Russell, G., Bradley, G. (1997). Teachers' computer anxiety: implications for professional development. Education and Information Technologies, 2 (1), pp.17-30.

Scrimshaw, P. (2004). Enabling teachers to make successful use of ICT. Becta. www.becta.org.uk/page_documents/research/enablers.pdf

Simpson, M., Payne, F., Munro, R., Hughes, S., Lynch, E. (1997). ICT in initial teacher education in Scotland. Northern College, Department of Educational Research.

Snoeyink, R., Ertmer, P. (2001). Thrust into technology: how veteran teachers respond. Journal of Educational Technology Systems, 30 (1), pp.85-111.

Appendix- I (Questionnaire Booklet-1)

RESEARCH TOPIC TRENDS OF ICT INTEGRATION INTO UNIVERSITY CURRICULUM: FACULTY OF ARTS, UNIVERSITY OF DHAKA

Dear Sir / Madam,

In connection with my requirements for M.A. thesis at University of Dhaka, I am conducting a research in the topic cited above. The main objective of the study is to investigate the trends of ICT integration into university curriculum, identify access and use of computer by the teachers and also examine the barriers for integrating ICT into university curriculum, so that possible suggestion can be made.

So, it would be very helpful for me if you had filled up the questionnaire. I assure you that the data being collected will be kept confidential and used for my research work only.

Thank you for your time and consideration.

Sincerely,
Hasna Hena Borna
M.A. Student,
Department of Information Science & Library management
University of Dhaka.

QUESTIONNAIRE (Teacher)

Please answer all the following questions. (Tick all that applies)

PERSONAL INFORMATION

- Q.1 Your Sex?
- ☐ MALE ☐ FEMALE
- Q.2 Age Range?
- ☐ 21 - 25 YEARS ☐ 26 - 30 YEARS
☐ 31 - 35 YEARS ☐ 36 - 40 YEARS
☐ + 41 YEARS
- Q.3 Department ?
- ☐ Department of Information Science & Library Management ☐ Department of Urdu
☐ Department of Sanskrit ☐ Dpartment of Pali & Buddhist Studies
☐ Department of Islamic Studies
- Q.4 You have been teaching?
- ☐ 0 - 1 YEAR ☐ 2 - 5 YEARS
☐ 6 - 10 YEARS ☐ 11 - 15 YEARS
☐ + 15 YEARS

ACCESS AND USE OF COMPUTER

- Q.5 Do you use ICT in teaching?
- ☐ YES ☐ NO
- Q.6 If YES what Technologies? (tick all that applies)
- ☐ Tutorials ☐ Video Conference
☐ Retro/Video projector ☐ USB Memory
☐ Digital Interactive boards
- Q.7 If NO What are the reasons? (Tick all that applies)
- ☐ They are non-existent ☐ Not skilled enough
☐ lack of technical support ☐ Lack of time
☐ Others
- Q.8 Do you use the following resources for teaching? (Tick all that applies)
- ☐ Word-processing tools ☐ Spreadsheets
☐ Educational software ☐ Others
☐ Digital Encyclopedia
- Q.9 If YES What purpose? (Tick all that applies)

- ☐ Personal Use
☐ Administrative (marks, reports)
☐ Teaching
 ☐ Preparing classes
☐ Others
- Q.10 If NO, state why? (Tick all that applies)**
- ☐ They are not available
☐ Quite expensive
☐ Lack of time
 ☐ lack of technical support
☐ Others
- Q.11 Have you attended a formal computer training course?**
- ☐ YES ☐ NO
- Q.12 If Yes, under which initiative?**
- ☐ Self-sponsored
☐ Sponsored by the Department
☐ Sponsored by the Faculty of Arts
 ☐ Sponsored by a private body
☐ Others

WHAT IS YOUR OPINION ABOUT STUDENTS & DEPARTMENT

- Q.13 Students would learn better using computers**
- ☐ Strongly Agree
☐ Agree
☐ Neutral
 ☐ Disagree
☐ Strongly Disagree
- Q.14 Students imply a new pedagogical approach**
- ☐ Strongly Agree
☐ Agree
☐ Neutral
 ☐ Disagree
☐ Strongly Disagree
- Q.15 Computer will distract students**
- ☐ Strongly Agree
☐ Agree
☐ Neutral
 ☐ Disagree
☐ Strongly Disagree
- Q.16 Department lack support to use ICT**
- ☐ Strongly Agree
☐ Agree
☐ Neutral
 ☐ Disagree
☐ Strongly Disagree
- Q.17 Teachers are not interested in problem-solving using computers**
- ☐ Strongly Agree
☐ Agree
☐ Neutral
 ☐ Disagree
☐ Strongly Disagree
- Q.18 Department authorities are not committed towards ICT.**

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neutral

- ☐ Disagree
- ☐ Strongly Disagree

Q.19 **Do you use ICT if the Faculty of Arts made provision for rewards for ICT usage in teaching**

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neutral

- ☐ Disagree
- ☐ Strongly Disagree

Q.20 **What is your expectation from the department with regard to ICT?**

Appendix- II (Questionnaire Booklet-2)

QUESTIONNAIRE (Student)

Please answer all the following questions (Tick all that applies)

PERSONAL INFORMATION

- Q.1 Your Sex?
☐ MALE ☐ FEMALE
- Q.2 Age Range?
☐ 19-21 ☐ 22-24
- Q.3 Department?
☐ Department of Information Science & Library Management
☐ Department of Sanskrit
☐ Department of Islamic Studies
☐ Department of Urdu
☐ Department of Pali & Buddhist Studies

ACCESS AND USE OF COMPUTERS

- Q.4 Do you have access to computers in your department?
☐ YES ☐ NO
- Q.5 If YES, what frequency?
☐ Every day ☐ A few times a month
☐ A few times a week ☐ Once a month
☐ Once a week
- Q.6 If NO, What are the reasons?
☐ Lack of skills & interest ☐ Lack of infrastructure
☐ Lack of time ☐ Others
☐ Dept. does not grant access
- Q.7 Do you have access to computers at home?
☐ YES ☐ NO
- Q.8 Do you have access to computers outside the department or home?
☐ YES ☐ NO
- Q.9 If YES, please choose all that applies from the following places
☐ Cybercafés ☐ Friends'
☐ Private Institute ☐ Others
- Q.10 Do you use the Internet in your department?

- ☐ No Internet in school
☐ Sometimes
☐ Very often
- ☐ Very rarely
☐ Only during class periods
- Q.11 Do you have an E-mail account?**
- ☐ YES
 ☐ NO
- Q.12 If YES , where do you read your mails? (Tick all that applies)**
- ☐ Home
☐ Department
☐ Cybercafés
 ☐ Friends'
☐ Mobile phone
- Q.13 What is your primary activity on the Internet?**
- ☐ E-mail
☐ Searching for information
☐ Online Games
 ☐ Facebook /chat, etc.
☐ Training and course materials
- Q.14 Do you have a USB flash?**
- ☐ YES
 ☐ NO
- Q.15 If YES, for what purpose? (Tick all that applies)**
- ☐ Save and copy music
☐ Data transfer only
☐ Internet Downloads
 ☐ Store course materials and assignment
☐ Others
- Q.16 Where did you use computers for the first time?**
- ☐ Home
☐ Department
☐ Cybercafés
 ☐ Friends'
☐ Mobile phone
- Q.17 Do you have a computer Laboratory in your department?**
- ☐ YES
 ☐ NO
- Q.18 For what primary reason do you use a computer?**
- ☐ Learning & Research tool
☐ Internet (Email, chat)
☐ Games
 ☐ Entertainment (Music, films)
☐ Others
- Q.19 Do you share your computer with other students during lab-classes?**
- ☐ YES
 ☐ NO
- Q.20 If YES, how many are you when sharing?**
- ☐ 1
☐ 2
☐ 3
☐ 4
☐ 5

This page intentionally left blank