

**“Digital Literacy Skills of University Students of Bangladesh: A
Comparative Study between a Public and a Private University**

**Thesis submitted to
The Department of Information Science and Library Management
University of Dhaka
As a partial fulfillment requirement of the
Degree of Master of Arts (MA)**

“Digital Literacy Skills of University Students of Bangladesh: A Comparative Study between a Public and a Private University”



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Private University”**

Supervisor's Certificate

I have the pleasure to certify that the thesis entitled **“Digital Literacy Skills of University Students of Bangladesh: A Comparative Study between a Public and a Private University”**

by **Tamanna Hossain**, Roll No. 2547 as a partial fulfillment of the degree of Master of Arts in Information Science and Library Management, University of Dhaka is a bonafide record of research conducted by her under my supervision and that this thesis has not formed the basis for the award to the candidate of any degree, diploma, fellowship or other similar title.

I also certify that this thesis represents independent work on the part of the Candidate.

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Dedicated to

My Mother

Bismillaahir Rahmanir Raheem (In the name of Allah the Most Gracious, the Most Merciful)

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CHAPTER I

Introduction

"Today's students are no longer the people our educational system was designed to teach."

Prensky (2001)

1.1 Introduction

We are finding ourselves in a rapidly growing and complex digital environment. Society is now becoming increasingly digital. Over the past decade digital technologies have become embedded in popular culture. Mobile phones are widely used by young people and adults alike. Websites such as YouTube and Wikipedia are the first port of call for many people seeking information about a chosen area of interest. TV, films and music are stored and accessed on computers, MP3 players and online. Email allows instant communication between people across the world. Online shopping and banking have become more prevalent and government services have become increasingly internet-based. Web 2.0 technologies such as social networking sites allow people to collaborate by sharing and editing online content. Although we cannot and should not overlook the inequalities that still exist in access to digital technology and the internet, it can be said that digital media is now a central aspect of most people's lives, whatever their age or social status. The skills, knowledge and understanding of digital literacy are therefore becoming indispensable as young people grow up in a society in which digital technology and media play an ever more important role. The culture of technology is an integral aspect in the dynamics of the wider generation in today's age especially in the lives of young people. With this shift in focus, there also emerged the theory that the inhabitants of this environment, namely students born after

1980, were inherently better suited to navigating the rapid and continual development of the digital technologies. *Digital Natives*, or the Net Generation as they came to be known, were presumed to have had the greatest exposure to digital technologies, and therefore would have sophisticated skills in using these technologies (Presky 2001, Oblinger & Oblinger 2005). Oblinger & Oblinger (2005) described this generation of students as “...digitally literate, constantly connected to others, ‘immediate’ in nature, experiential learners and socially centred beings.” Furthermore, Prensky (2001) argued that “today’s students are no longer the people our educational system was designed to teach.” Digital natives are said to prefer receiving information quickly; be expert at processing information rapidly; prefer multi-tasking and non-linear access to information; have a low tolerance for lectures; prefer active rather than passive learning; and rely heavily on communication technologies to access information and to carry out professional and social interactions. (Prensky 2001; Oblinger 2003, Frand 2000). However, these presumptions have no basis in empirical evidence (Margaryan, Littlejohn, & Vojt, 2011). Selective and contextual use of technologies by students i.e. their experience or ability to using email, word processing tools and social networking on the Internet does not necessarily transfer into digital literacy skills. Hargittai (2002) found that digital literacy skills and students’ ability to use the Internet as a resource varies significantly, depending on the gender, ethnic identities and socio economic backgrounds of students. The technological advances, specifically digital technology has prompted swift and radical change in the world we know. With such change, today’s students “think and process information fundamentally differently from their predecessors”.

1.2 Definition(s) of Digital Literacy (DL)

Definition

While much is written in the name of Digital Literacy, consensus on a single definition of the phrase seems to be elusive. Digital literacy is closely related to the concepts of information literacy, computer or IT literacy, and multiple sets of new literacies. Individuals use the term imprecisely, and this leads to miscommunication and misunderstanding (Eshet-alkalai, 2004).

The term "digital literacy" was first defined in Gilster's (1997) eponymous book as "the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers". Gilster's definition is general and conveys almost the same meaning as information literacy. His further description in the book, however, focuses more on networked computer sources and application of Internet. Gilster makes no less than eleven attempts at a definition of the concept ranging from digital literacy as 'the ability to access networked computer resources and use them,' (Gilster, 2007) to it being 'partly about awareness of other people and our expanded ability to contact them to discuss issues and get help'. The idea most cited by other authors, however, is Gilster's assertion that digital literacy is about '*mastering ideas, not keystrokes*'. These details misled many readers as they assumed that digital literacy refers to the technical aspects only (Bawden, 2001). Gilster (1997) emphasizes the point that digital literacy is not about keystrokes but about the ideas that we master. This, says Bawden, is quite simply "literacy in the digital age. . . The current form of the traditional idea of literacy *per se*—the ability to read, write, and otherwise deal with information using the technologies and formats of the time." Mackey and Jacobson (2011) assert that digital literacy is associated with

critical thinking. Martin and Madigan (2006), for example, explore a range of conceptions of digital literacy and how these concepts are enabled and supported in different communities.

A broad definition of 'Digital Literacy' is provided by Martin (2005), who acknowledges related "literacies", such as ICT literacy, information literacy, media literacy and visual literacy which have gained new and increased relevance in the digital environment. He describes digital literacy as "the ability to succeed in encounters with the electronic infrastructures and tools that make possible the world of twenty-first century." Martin focused on the need for mastering electronic tools as crucial to success in learning communities concerning digital literacy and e-learning. He also contends that digital literacy involves "acquiring and using knowledge, techniques, attitudes and personal qualities and also includes the ability to plan, execute and evaluate the digital actions in solution of life tasks, and the ability to reflect one's own digital literacy development." Digital literacy is more than just the technical ability to operate digital devices properly; it comprises a variety of cognitive skills that are utilized in executing tasks in digital environments, such as surfing the Web, deciphering user interfaces, working with databases, and chatting in chat rooms. Digital literacy has become a "survival skill" in the technological era—a key that helps users to work intuitively in executing complex digital tasks. In recent years, extensive efforts have been made to describe and conceptualize the cognitive skills that users employ in digital environments.

This conception of digital literacy as what *literacy* is in the digital era opens up a second—sociocultural—line of argument for understanding "digital literacy" as a shorthand (Street 1984) for digital *literacies*.

From a sociocultural perspective literacy is a matter of social practices (Gee, Hull & Lankshear, 1996). Brian Street (1984) argues that literacy "is best understood as shorthand for the social

practices and conceptions of reading and writing.” Silvia Scribner and Michael Cole (1981) had argued that literacy comprises “a set of socially organized practices which make use of a symbol system and a technology for producing and disseminating it”. Literacy does not simply involve knowing how to encode and decode a particular kind of script. According to Scribner and Cole it involves “applying this knowledge for specific purposes in specific contexts of use.” (1981)

A broad line of demarcation indicated by Bawden involves Eshet-Alkalai’s (2004) caution concerning the inconsistency between those who conceive digital literacy as “primarily concerned with technical skills, and those who see it as focused on cognitive and socio-economic aspects of working in a digital environment.”

Similarly, we might distinguish *conceptual* definitions of “digital literacy” from “*standardized operational*” definitions (Lankshear & Knobel, 2006). Conceptual definitions present views of digital literacy couched as a general idea or ideal. In one of the earliest examples of a conceptual definition Richard Lanham (1995, p. 198) claims that “literacy” has extended its semantic reach from meaning “the ability to read and write” to now meaning “the ability to understand information however presented.” He emphasizes the multimediated nature of digital information and argues that to be digitally literate involves “being skilled at deciphering complex images and sounds as well as the syntactical subtleties of words.” (Lanham, 1995). Standardized operational definitions, by contrast, “operationalize” what is involved in being digitally literate in terms of certain tasks, performances, demonstrations of skills, etc., and advance these as a *standard* for general adoption.

Leena Rantala and Juha Suoranta on digital literacy policies in the European Union, Morten Sjøby on digital competence with particular reference to the Norwegian context, and Allan Martin on digital literacy and the digital society especially foreground the sheer diversity and

complexity of conceptions of digital literacy. They situate digital literacy in relation to a web of “literacies of the digital” (Martin) including ICT/computer literacy, information literacy, technological literacy, media literacy, communication literacy, visual literacy, network literacy, e-literacy, digital competence, digital building, and the like. David Buckingham addresses “web literacy,” “game literacy” and “writing digital media” in the context of developing an idea of digital literacy in terms of what young people need to know about digital media.

This sheer variety means that digital literacy can be seen as “a framework for integrating various other literacies and skill-sets” without “the need to encompass them all” or to serve as “one literacy to rule them all” (Martin, 2006). Equally, however, it reminds us that any attempt to constitute an umbrella definition or overarching frame of digital literacy will necessarily involve reconciling the claims of myriad concepts of digital literacy, a veritable legion of digital literacies.

1.3 History of Digital Literacy (DL)

The field of 'digital literacy' has a relatively long history; it is a term that has evolved. Its beginnings can be traced back to the end of the 1960s when the standard definitions of 'literacy' missed out something important from the increasingly visual nature of the media produced by society. In 1969 John Debes offered a tentative definition for a concept he called '*visual literacy*': '*Visual Literacy* refers to a group of vision-competencies a human being can develop by seeing and at the same time having and integrating other sensory experiences. The development of these competencies is fundamental to normal human learning. When developed, they enable a visually literate person to discriminate and interpret the visible actions, objects, symbols, natural or manmade, that he encounters in his environment. Through the creative use of these

competencies, he is able to communicate with others. Through the appreciative use of these competencies, he is able to comprehend and enjoy the masterworks of visual communication.’ (Debes, quoted in Avgerinou & Ericson, 1997, p. 281) This definition is closely tied to those surrounding Traditional Literacy. It mentions interpreting symbols, communication and understanding. Dondis in *A Primer in Visual Literacy* made explicit the reasoning behind considering visual elements as requiring a separate 'literacy':

‘In print, language is the primary element, while visual factors, such as the physical setting or design format and illustration, are secondary or supportive. In the modern media, just the reverse is true. The visual dominates; the verbal augments. Print is not dead yet, nor will it ever be, but nevertheless, our language-dominated culture has moved perceptively toward the iconic. Most of what we know and learn, what we buy and believe, what we recognize and desire, is determined by the domination of the human psyche by the photograph. And it will be more so in the future.’(Dondis, 1973, p.7) Those who espoused this doctrine were careful to stress the importance of being able to both decode and encode, creating and communicating via images. Considine championed visual literacy as being ‘the ability to comprehend and create images in a variety of media in order to communicate effectively,’ leading to those who are 'visually literate' being ‘able to produce and interpret visual messages’ (Considine, 1986, p.38).

The concept of '*visual literacy*' continued until the late 1990s, eventually being enveloped by 'umbrella terms' combining two or more 'literacies.' Parallel to visual literacy from the 1970s onwards came the development of the term '*technological literacy*.' Literacy was reduced to being 'technology literate' meaning ‘knowing how to use a particular piece of technology.’ Technological or technology literacy is too broad a concept as ‘nearly all modes of communication are technologies. Discussions about, and advocates of, 'technological literacy'

had mostly petered out by the late 1980s/early 1990s. Growing out of the perceived need for a 'technological literacy' came, with the dawn of the personal computer, calls for definitions of a '*computer literacy*.'

The term '*computer literacy*' was an attempt to give a vocational aspect to the use of computers and to state how useful computers could be in almost every area of learning (Buckingham, 2008, p.76). Definitions of computer literacy from the 1980s include 'the skills and knowledge needed by a citizen to survive and thrive in a society that is dependent on technology' (Hunter, 1984, p.45), 'appropriate familiarity with technology to enable a person to live and cope in the modern world' (Scher, 1984, p.25), and 'an understanding of computer characteristics, capabilities and applications, as well as an ability to implement this knowledge in the skilful and productive use of computer applications' (Simonson, et al., 1987, p.232). As Andrew Molnar, who allegedly coined the term, points out '*computer literacy*,' like '*technological literacy*' is an extremely broad concept, meaning that almost anything could count as an instance of the term:

'We started computer literacy in '72 [...] We coined that phrase. It's sort of ironic.

Nobody knows what computer literacy is. Nobody can define it. And the reason we selected [it] was because nobody could define it, and [...] it was a broad enough term that you could get all of these programs together under one roof.' (Andrew)

The term "Computer literacy" began to lose credibility, with "*information literacy*" gaining popularity in the 1990s. This is a term that was coined in the 1970s but which has undergone a number of transformations to keep it current and relevant. Unlike '*technological literacy*,' and '*computer literacy*,' is not bounded by technology (and therefore likely to become outdated), nor is it a corrective to an existing '*literacy*' (as with '*visual literacy*'). Because it is not dependent upon any one technology or set of technologies, '*information literacy*' has been eagerly taken

onboard by librarians (Martin 2008, p.160) and governments (Fieldhouse & Nicholas, 2008, p.50) alike. Indeed more recently it has been defined as a 'habit of mind' rather than a set of skills:

Information literacy is a *way of thinking* rather than a set of skills... It is a matrix of critical and reflective capacities, as well as disciplined creative thought, that impels the student to range widely through the information environment... When sustained through a supportive learning environment at course, program or institutional level, information literacy can become a *dispositional habit*... a 'habit of mind' that seeks ongoing improvement and self-discipline in inquiry, research and integration of knowledge from varied sources.' (Center for Intellectual Property in the Digital Environment, 2005, viii-ix)

Despite this, many theorists propose information literacy as an 'overarching literacy of life in the 21st century' (Bruce, 2002) and bodies such as the US Association of Colleges and Research Libraries come up with 'performance indicators' for the concept (Martin, 2008 p.159), 'information literacy' suffers from a lack of descriptive power. It is too ambitious in scope, too wide-ranging in application and not precise enough in detail to be useful in an actionable way. Even a move from talking about being 'information literate' to 'information savvy' (Fieldhouse & Nicholas, 2008, p.47) runs into difficulties for the same reasons.

The Evolution of Digital Literacy

After 'visual literacy,' 'technological literacy,' 'computer literacy,' and 'information literacy' ultimately proved unsuccessful, many sought to find a term more in keeping with digital communications and the Internet age. Although the concept of 'digital literacy' was not invented by him, the beginning of real discussion of the term was the publication of Paul Gilster's 1997 book *Digital Literacy*. Despite the promising title, the book has been criticized for giving

multiple definitions of 'digital literacy,' with Gilster's idiosyncratic writing style cited as a reason why it didn't have an immediate impact. (Bawden, 2008). Nevertheless, Gilster's work *did* begin to have an impact in the early years of the 21st century with others citing his 'generic expression of the idea' as 'strength' (Bawden, 2008, p.18). Gilster's attempts at defining the concept ranging from digital literacy as 'the ability to access networked computer resources and use them,' to it being 'partly about awareness of other people and our expanded ability to contact them to discuss issues and get help'(Gilster, 2007). Since the advent of Digital literacy it collected popularity, criticism and also went through many phases of development by authors who tried to define digital literacy within their perceptions.

1.4 Need for Digital Literacy (DL)

We know that the nature of literacy has changed in the digital age, but unfortunately, we do not have decades to catch up to this change. Digital Literacy are those capabilities that mean an individual is fit for living, learning and working in a digital society. Digital literacy is about being able to make use of technologies to participate in and contribute to modern social, cultural, political and economic life. It covers understanding the impact of new technologies on society, understanding and being able to manage digital identities appropriately and being able to locate, organize, understand, evaluate, analyze and present digital information.

Digital literacy involves critically engaging with technology and developing a social awareness of how a number of factors including commercial agendas and cultural understandings can shape the ways in which technology is used to convey information and meaning. It means being able to communicate and represent knowledge in different contexts and to different audiences (for

example, in visual, audio or textual modes). This involves finding and selecting relevant information, critically evaluating and re-contextualizing knowledge and is underpinned by an understanding of the cultural and social contexts in which this takes place.

Digital literacy gives young people the ability to take advantage of the wealth of new and emerging opportunities associated with digital technologies whilst also remaining alert to the various challenges technology can present. In short, digital literacy is the ‘savvyness’ that allows young people to participate meaningfully and safely as digital technology becomes ever more pervasive in society.

Educational Institutions are increasingly encouraged to embed the use of ICT in all subject areas across the curriculum. Considering how digital literacy supports subject knowledge can help to ensure that technology-use enhances teaching and learning rather than simply becoming an ‘add-on.’ Indeed, if formal education seeks to prepare young people to make sense of the world and to thrive socially, intellectually and economically, then it cannot afford to ignore the social and cultural practices of digital literacy that enable people to make the most of their multiple interactions with digital technology and media. Yet the notion of digital literacy and how it may translate to teaching and learning is not always well understood.

1.5 Background of the study

Digital literacy is the ability to succeed in encounters with the electronic infrastructures and tools that make possible the world of the twenty-first century. Digital literacy has become a central enabling agent in the educational enterprise, as a result of a number of trends.

The most significant is simply that the world is becoming *e-permeated*. Electronic devices and facilities now underpin the practice of most sectors of society and most human activities. This does not mean that they have *changed* society; electronic facilities may only enhance existing practice or make it easier or quicker. Whether the cumulative effect of such changes will be to alter the nature of society is another question. But the fact that the world is e-permeated means that those who can understand and comfortably use e-facilities are significantly advantaged, in terms of educational success, employment prospects and other aspects of life.

Education, like other social sectors, is rapidly adopting electronic means. But the evolution of electronic tools for education has run alongside, and been to some extent fuelled by, a paradigm shift in approaches to learning and teaching. In moving towards student-centred and constructivist learning models, electronic tools are seen as key factors in realising learning environments. Mastery of the tools thus becomes an entitlement for the student if he/she is to learn successfully. The purpose of the study is to trace out the present scenario of Digital Literacy skills within the University students of Bangladesh. The study will evaluate the Digital Literacy skills of the students by finding out their usage of digital technology to communicate, access, and share digital content. The study will also assess the creativity and the ability of critical thinking of the students to construct knowledge from hyper-textual knowledge domain and critically evaluate and assess the quality of digital information.

1.6 Significance of the study

Digital literacy is an important part of everyday life in Bangladesh in the 21st century. Most careers demand some level of understanding of how to use a computer, how to competently navigate the Internet and find reliable information, how to communicate electronically, and how to manage data. University students are termed as the *Future Leaders*, thus it is inevitable that

the future leaders be digital literate so as to perform actively in the society and for the development of the country. This critical analysis is important because it will provide with a background of the types of skills that are required for digital literacy. In addition, the analysis will provide a comparison between the levels of digital literacy skills of the students of both private and public universities of Bangladesh. The study is likely to find out the progress and gaps in both digital literacy learning and digital literacy teaching within the educational curriculum.

1.7 Research Question

“Digital Literacy Skills of University Students of Bangladesh: A comparative study between a public and a private University.”

1.8 Scope of the study

The focus of this research is solely on the public and private university students’ views on DL in order to better understand their opinions and experiences with DL in their use of various DL skills for academic work or research. The research therefore focuses on finding out how respondents perceive DL, touching on issues such as their basic computer skills, familiarity with internet related terms, use, understand and creating digital contents, social networking skills, importance of IPR and copyright in the use of digital information. The research also examines respondents’ opinions about the significance of DL and also the need to introduce DL programs in higher education. DL is a very broad concept but the research covered only some aspects of interest to the topic aptitude measuring DL and ability to access, evaluate and use information from a variety of media.

1.9 Limitations of the study

This study was conducted carefully. In spite of all the efforts, there might be some shortcomings which may raise the question of effectiveness of the findings; the size of the sample of both Public and Private University students might have limited the scope of the study. A larger sample size would definitely provide more specific information. Many of the sample respondents were not familiar with the concept of DL, therefore the analyzed result might not reflect the exact condition; and although the development plan for Digital Literacy has been suggested, but because the study is limited to specific Public and Private Universities it might weaken the development strategies slightly.

1.10 Framework of the study

The research is organized into seven chapters; with chapter 1 covering the main Introduction, definition of DL, history of DL, need for DL, background of the study, significance of the study, the research problem, followed by the scope and limitations of the study. Chapter 2 covers detailed discussion on skills, components, elements and competencies of digital literacy. Chapter 3 discusses about the condition of DL in Bangladesh along with the details of the two Universities covered for survey. Chapter 4 contains the literature reviewed for the research, giving an overview of DL relevant for this study. Chapter 5 covers the research design and methodology with all the related aspects of Questionnaire design, sampling and data collection. Chapter 6 details the analysis techniques, representing the analyzed data through tables, and charts along with summary of the responses received from both the sample groups. Chapter 7 is devoted for recommendations and conclusive discussion of the study.

Finally, the finalized questionnaire which was used to collect data is appended at the end of the chapters, and the references and bibliographical sources that were used for the purpose of this study are also cited.

<p>CHAPTER I</p> <p>INTRODUCTION</p>
<p>CHAPTER II</p> <p>DIGITAL LITERACY SKILLS AND COMPETENCIES</p>
<p>CHAPTER III</p> <p>BACKGROUND OF THE UNIVERSITIES</p>
<p>CHAPTER IV</p> <p>LITERATURE REVIEW</p>
<p>CHAPTER V</p> <p>METHODOLOGY</p>
<p>CHAPTER VI</p> <p>ANALYSIS AND DISCUSSION OF THE STUDY</p>
<p>CHAPTER VII</p> <p>RECOMMENDATION & CONCLUSION</p>

Fig 1.1: Framework of the study

Chapter II

Digital Literacy Skills & Competencies

2.1 Introduction

Digital literacy is more than just the technical ability to operate digital devices properly; it comprises a variety of cognitive skills that are utilized in executing tasks in digital environments, such as surfing the Web, deciphering user interfaces, working with databases, and chatting in chat rooms. Digital literacy has become a “survival skill” in the technological era—a key that helps users to work intuitively in executing complex digital tasks. In recent years, extensive efforts have been made to describe and conceptualize the cognitive skills that users employ in digital environments. ‘Under the digital literacy umbrella are numerous interrelated skills that range from basic awareness and training to foster informed citizens and to build consumer and user confidence, to highly sophisticated and more complex creative and critical literacies and outcomes. Given the constantly evolving nature of technology, acquisition of digital literacy skills represents a process of lifelong learning.’ (MNet, 2010)

Digital literacy skills are the focus of this study. This study is carried out to determine various types of digital literacy skills and competences that are needed to survive this technological era. Many concepts of digital literacy skills have been developed throughout this study and based on these concepts the study has been conducted. These skills provided for the grounds to measure the level of digital literacy skills between the university students of Bangladesh. This chapter throws light on numerous skills and competencies for digital literacy that will help in taking further the research work.

The 2005 policy document eNorway 2009: the digital leap, for example, talks of ‘digital skills’: ‘Digital skills include the ability to exploit the opportunities offered by ICT, and use them critically and innovatively in education and work. Digital skills also include the ability to be critical to sources and assess content. Use of digital tools is a skill the individual must acquire, maintain and continually develop, if he or she is to be a digitally skilled and critical citizen.’ (Norwegian Ministry of Modernisation 2009)

Digital literacy is far from a revolutionary competence or set of skills for Mifsud. She argues that there are broadly *four elements to digital literacy*: (i) the manipulation of digital tools, (ii) an extension of print-based literacies, (iii) appropriate ‘cut-and-paste’ and ‘copy/delete’ techniques, and (iv) the ‘inclusion of the visual’ (Mifsud 2006). Digital literacy, therefore, is effectively a body of basic skills in a digital world.

2.2 Competencies for Digital Literacy

Competencies for digital literacy can be classified according to three main principles: *Use, Understand and Create*.

Use represents the technical fluency that is needed to engage with computers and the Internet. Skills and competencies that fall under “use” range from basic technical know-how: using computer programs such as word processors, web browsers, email, and other communication tools – to the more sophisticated abilities for accessing and using knowledge resources, such as search engines and online databases, and emerging technologies such as cloud computing.

Understand is the set of skills that help us comprehend, contextualize, and critically evaluate digital media, so that we can make informed decisions about what we do and encounter online. These are the essential skills that young people start learning as soon as they go

online. *Understand* includes recognizing how networked technology affects our behaviour and our perceptions, beliefs and feelings about the world around us.

Understand also prepares us for a knowledge economy as we develop – individually and collectively – information management skills for finding, evaluating and effectively using information to communicate, collaborate and solve problems.

Create is the ability to produce content and effectively communicate through a variety of digital media tools. Creation with digital media includes

- Being able to adapt what we produce for various contexts and audiences,
- To create and communicate using rich media such as images, video and sound.
- To effectively and responsibly engage with Web 2.0 user-generated content such as blogs and discussion forums, video and photo sharing, social gaming and other forms of social media.

The ability to *create* using digital media ensures that digital literate people are active contributors to digital society. Creation – whether through blogs, tweets, wikis or any of the hundreds of avenues for expression and sharing online – is at the heart of citizenship and innovation.

The term “multi-literacies” is often used to describe the various aptitudes and abilities that are needed for us to *use*, *understand* and *create* digital media. In this perspective, “digital literacy” may be considered not as a concrete set of skills, but as a framework that draws from and expands on numerous literacies and competencies.

Under the “digital literacy umbrella” are a wide range of interrelated skills that traditionally fall under:

Media literacy

Media literacy reflects our ability to access, analyze, evaluate and produce media through understanding and appreciation of:

- The art, meaning and messaging of various forms of media texts
- The impact and influence of mass media and popular culture
- How media texts are constructed and why they are produced
- How media can be used to communicate our own ideas effectively

Technology literacy

It ranges from basic computer skills to more complex tasks like editing a digital film or writing computer code. This involves both skills and a set of good online habits that include reflection, critical awareness and responsibility. It also includes ability to assess what information is needed, to know how to find it online and how to critically evaluate and apply it.

Information literacy

Information literacy has been seen as a 'liberal art' with an element of critical reflection, critical evaluation, and as involving problem solving and decision-making dimensions (Bruce, 1997).

National Forum on Information Literacy, United States (2005) defines, IL is defined as the ability to know when there is a need for Information, to be able to identify, locate, evaluate and effectively use that Information for the issue or problem at hand. The aspects which constitute the IL are represented by:

- Tool literacy or the ability to understand and use the practical and conceptual tools of current information technology relevant to education and the areas of work and professional life that the individual expects to inhabit.

- Resource literacy or the ability to understand the form, format, location and access methods of information resources, especially daily expanding networked information resources.
- Social-structural literacy or knowing that and how information is socially situated and produced.
- Research literacy or the ability to understand and use the IT-based tools relevant to the work of today's researcher and scholar.
- Publishing literacy or the ability to format and publish research and ideas electronically, in textual and multimedia forms (including via World Wide Web, electronic mail and distribution lists, and CD-ROMs).
- Emerging technology literacy or the ability to permanently adapt to, understand, evaluate and make use of the continually emerging innovations in information technology so as not to be a prisoner of prior tools and resources, and to make intelligent decisions about the adoption of new ones.
- Critical literacy or the ability to evaluate critically the intellectual, human and social strengths and weaknesses, potentials and limits, benefits and costs of information technologies.

Visual literacy

Visual literacy reflects our ability to understand and produce visual messages, whether through objects, actions or symbols. Visual literacy is essential to both learning and communication in modern society.

Communication literacy

These competencies form the foundation for thinking, organizing and connecting with others in a networked society. In particular, people need not only to understand how to integrate knowledge from multiple sources such as music, video, online databases, and other media; they also need to know how to use multiple sources to disseminate and share knowledge.

Social literacies

It includes skills for

- Working within social networks
- Pooling knowledge within a collective intelligence
- Negotiating successfully across cultural differences, and
- Reconciling conflicting bits of data to form a coherent picture of the world around them.

Bawden (2001) derived the following set of competencies from Gilster's (1997) anecdotal description of digital literacy:

- critical thinking skills for evaluating retrieved information
- reading comprehension skills for materials available in dynamic hypertext environment
- knowledge assembly skills for collecting information from diverse sources
- onlinereading skills
- problem solving skills
- communication and online publishing skills
- awareness of people online as sources of advice and assistance
- awareness of the traditional resources in connection with new media
- managing information flow with filters.

Gilster summarizes these at one point in his book by suggesting that there are four core competencies of digital literacy: Internet searching, hypertext navigation, knowledge assembly, and content evaluation. At various points, content evaluation and critical thinking is referred to as “most essential,” “most significant” and “overarching.” At other points, the ability to read and understand dynamic non-sequential information is cited as the basis for the concept. In still other sections it is the finding of information from various sources which is given priority.

2.3 Skills for Digital Literacy

Eshet has established a holistic conceptual model for digital literacy, arguing that it covers most of the cognitive skills that users and scholars employ in digital environments and, therefore, providing researchers and designers of digital environments with a powerful framework and design guidelines. The model consists of the five digital literacy skills:

Photo-visual literacy skill

The evolution of digital environments from text based, syntactic to graphic-based semantic environments requires modern scholars to employ cognitive skills of “using vision to think” in order to create photo-visual communication with the environment. This unique form of digital literacy skill—the photo-visual skill—helps users to intuitively and freely “read” and understand instructions and messages that are presented in a visual- graphical form.

Reproduction literacy skill

The modern digital technologies provide scholars with new possibilities for creating art and academic work by reproducing and editing texts, visuals, and audio pieces. Besides the ethical and philosophical questions regarding the limits and criteria for legitimate—in genuine use of digital reproduction, the digital reproduction technologies require modern scholars to master a special kind of digital literacy, termed “reproduction literacy.” Digital reproduction literacy is

defined as the ability to create new meanings or new interpretations by combining preexisting, independent shreds of information in any form of media (text, graphic, or sound). Reproduction literacy is essential in two major fields—in writing, where preexisting sentences can be reorganized and rearranged to create new meanings, and in visual art, where preexisting audio or visual pieces can be edited and manipulated in order to create new art works.

Branching literacy skill

The non-linear nature of modern hyper media technology introduced computer users to new dimensions of thinking that are necessary in order to make an educated use of this elaborate technology. In the past, the limited, non-hypermedia-based computer environments enhanced a more linear way of learning that was dictated by the non-flexible operating systems, and by the fact that users were used to books and expected to work with digital environments in much the same way they read through books. The modern hypermedia environments, such as the Internet, multimedia environments, and digital databases provide users with a high degree of freedom in navigating through knowledge domains, but at the same time, confront them with problems that involve the need to utilize non-linear and branching information-seeking strategies and to construct knowledge from independent shreds of information that were accessed in a non-orderly and non-linear way. Spiro et al. and Rouet and Levonen presented the cognitive flexibility theory, which described the importance of branching multidimensional thinking skills in constructing meaningful understanding of complex phenomena and led to the evolution of a new kind of digital literacy skill, termed “branching literacy skill,” or “hypermedia literacy skill.” Branching literacy requires that scholars who have good spatial-multidimensional sense of orientation stay oriented and avoid getting lost in the hyperspace while navigating through complex knowledge domains, despite the intricate navigation paths they may take. They must also have good

metaphoric thinking and the ability to create mental models, concept maps, and other forms of abstract representation of the web's structure, which help branching-literate scholars to overcome disorientation problems in hypermedia environments.

Information literacy skill

Today, with the exponential growth in available information, the consumers' ability to access information by sorting out subjective, biased, or even false information has become a key issue in training people to become smart information consumers. Information assessment is made in almost every work we do in digital environments, such as in data queries or in navigational decisions we make in the Web. It is the awareness of the users of their decisions that will determine the actual quality of the conclusions, positions, opinions, or models that they construct from the information. The ability of information consumers to make educated, smart information assessment requires a special kind of literacy skill, termed "information literacy skill."

The information literacy skill acts as a filter: it identifies false, irrelevant, or biased information, and avoids its penetration into the learner's cognition. Information-literate consumers are critical thinkers—people who always question information and never take it for granted. It is true that information literacy is not unique to the digital era; it was always a crucial trait of successful scholars, even before the information revolution. However, in the digital era, with the unlimited exposure of humans to digital information, it has become a survival skill that enables learners to make an educated use of information.

Socio-emotional literacy skill

The expansion of the Internet and other platforms of digital communication have opened new dimensions and opportunities for learning through knowledge-sharing groups, discussion groups, knowledge communities, chat rooms, and many other forms of collaborative learning. But these new opportunities face users with challenges that require them to employ sociological

and emotional skills in order to “understand the rules of the game” and “survive” the hurdles that await them in the mass communication of the cyberspace. Such challenges include not only the ability to share formal knowledge, but also to share emotions in digital communication, to identify pretentious people in chat rooms and to avoid Internet traps as a hoax and malicious Internet viruses. These require users to own a relatively new kind of digital literacy skill, termed ‘Socio-emotional skill,’ because it involves primarily emotional and sociological aspects of working in cyberspace. Among all types of digital literacy skills described here, socio-emotional literacy is probably the highest and most complex. It requires users who are very critical and analytical, very mature, and have a good command of information, branching, and photo-visual literacy skills.

An early approach to clarify the concept of digital skills was made by Jan Steyaert (2000) who categorized these skills in three groups: instrumental skills, structural skills and strategic skills. He referred to basic skills as *instrumental skills*, knowing how to deal with the technology as such, in other words keyboard knowledge (there is a dimension of complexity to these skills). A second cluster of skills he called *structural skills* which refer to the (new) structure in which information is contained, for instance the skill to make use of hypertext (jumping via keywords to other information sources) or looking for dynamic information (via discussion sites, rather than via static information on websites). The use of search engines and especially the capacity to search, find and evaluate information also fall within this category. Thirdly, the term *strategic skills* includes the basic readiness to search proactively for information, the attitude of taking decisions based on available information and the continuous scanning of the environment for information that is relevant to work or personal life. This classification was further developed by Alexander van Deursen and Jan van Dijk (2011) who subdivided the structural skills into formal

Internet skills (skills of navigation and orientation) and information Internet skills (skills to fulfill their information needs).

2.4 Levels of Digital Literacy

Three “levels” or stages are proposed for digital literacy development by the DigEuLit project is adopted from Martin & Grudziecki (2006) model.

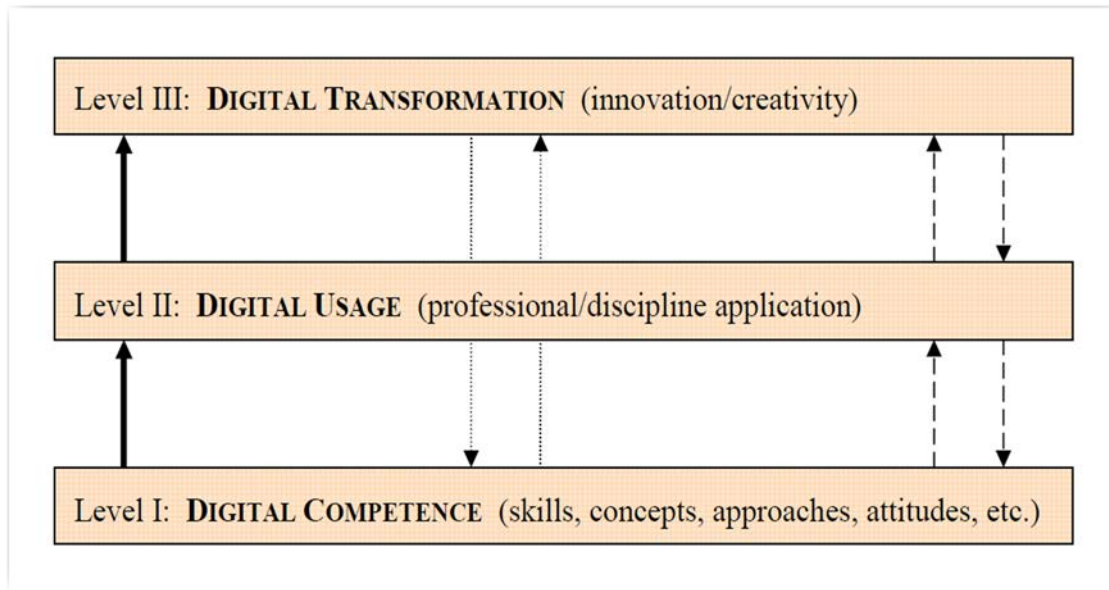


Fig 2.1: *Levels of Digital Literacy by Martin & Grudziecki, 2006*

Level I. Digital Competence

At the foundation of the system is ***digital competence***. This covers a wide range of topics, encompasses skill levels from basic visual recognition and manual skills to more critical, evaluative and conceptual approaches, and also includes attitudes and awarenesses. Individuals or groups draw upon digital competence as is appropriate to their life situation and return to gain more as new challenges are presented by the life situation.

The working group on “key competences” of the European Commission “Education and Training 2010” Program identifies ***digital competence*** as one of the eight domains of key

competences, defining it as “the confident and critical use of Information Society Technologies for work, leisure and communication.”(European Commission, 2004: 14). Information society technologies (IST) are defined as “offering services based on the use of Information and Communication technologies (ICT), the Internet, digital content, electronic media, etc., via for example a personal computer, a mobile telephone, an electronic banking machine, an eBook, digital television, etc.”Digital competence is regarded as consisting of knowledge, skills and attitudes. The Key Competences working group addresses this issue:

The terms ‘competence’ and ‘key competence’ are preferred to ‘basic skills’ which was considered too restrictive as it was generally taken to refer to basic literacy and numeracy and to what are known variously as ‘survival’ or ‘life’ skills. ‘Competence’ is considered to refer to a combination of skills, knowledge, aptitudes and attitudes, and to include the disposition to learn in addition to know-how. Components of digital competence may be mastered at levels of expertise which will vary from basic skills to more demanding evaluative or analytical competence.

Level II. Digital Usage

The central and crucial level is that of ***digital usage***: the application of digital competence within specific professional or domain contexts. Users draw upon relevant digital competences and elements specific to the profession, domain or other life-context. Each user brings to this exercise his/her own history and personal/professional development. Digital usages are thus shaped by the requirements of the situation. The drawing upon digital competence is determined by the individual exists digital literacy and the requirements of the problem or task. Digital usages are therefore fully embedded within the activity of the professional, discipline or domain

community. They become part of the culture of what Wenger has called “communities of practice”:

Communities of practice are groups of people who share a concern, a set of problems, or a passion about a topic, and who depend their knowledge and expertise in this area by interacting on an ongoing basis. (Wenger et al., 2002: 4) In communities of practice, learning becomes a communal activity intimately linked with everyday practice. Digital usages become embedded within the understandings and actions which evolve within the community and cause the community itself to evolve; the community of practice is thus also a community of learning.

Level III. Digital Transformation

The ultimate stage is that of ***digital transformation***, and is achieved when the digital usages which have been developed enable innovation and creativity, and stimulate significant change within the professional or knowledge domain. This change could happen at the individual level, or at that of the group or organization. Whilst many digitally literate persons may achieve a transformative level, transformation is not a necessary condition of digital literacy. Activity at the level of appropriate and informed usage would be sufficient to describe as digitally literate.

The concept of digital literacy is plainly a very broad span, from specific skills and competences to rather general awareness and perspective. Developments in the decade since it was proposed, from the ubiquity of Google to the rise of social networking have validated the list as representing, in broad terms, the needed form of literacy for the present time.

Chapter III

Background of the selected Universities

3.1 Digital literacy of University students

Solely for the purpose of this study the concept of Digital Literacy skills has been limited to university students only. While conducting the research numerous digital literacy initiatives came forward that dealt with primary school students, elementary students as well as university students. Margaryan and Littlejohn (2009) investigated the extent and nature of university students' use of digital technologies for learning and socialising. They found that students use a limited range of mainly established technologies. Sieberhagen and Cloete (2012) reported on the evaluation of a digital information literacy program (DILP) to determine the program's effectiveness in enhancing students' digital information literacy skills. The DILP was originally designed and developed for the South African student, as member of Generation Y, but was adapted after identifying the characteristics of Generation Z. New learning technologies were identified and incorporated in the DILP to enhance students' learning experience. Focusing on a pilot study in Oakville and a longitudinal research study in Sydney, Australia, Rowsell and Walsh (2011) compelled the readers to think about literacy in a new light. Without a push to redefine literacy, educators run the risk of teaching and learning language and literacy skill in anachronistic paradigms and frameworks. The DigEuLit project, funded by the EC eLearning Initiative, has a task of defining digital literacy and developing a framework and tools for digital literacy development in European educational settings.

3.2 Digital Literacy initiatives in Bangladesh

The concept of Digital Literacy is at the lime light now a day in Bangladesh after the declaration of the Digital Bangladesh Agenda taken up by the Government. The government started taking initiatives for building Digital Bangladesh with a vision 2021. Digital Bangladesh implies the broad use of computers, and embodies the modern philosophy of effective and useful use of technology in terms of implementing the promise in education, health, job placement and poverty reduction.

ICT is the backbone of any digital initiative. ICT covers the vast area of information technology, communication technology and the telecommunication technology. ICT is also a combination of physical backbone and intellect. Computer systems, network machineries, software, wire and wireless connectivity systems, broadcast hardware and many other hardware and accessories are the physical backbone. The trained human behind the backbone are the intellects. Bangladesh is now climbing up the list for embracing technology as today many governmental institutions and the private sector are all willing to adopt the changes that ICT is likely to bring if properly implemented in all the sectors responsible for economic growth and social development. Some of the initiatives do support this statement.

Intel Corporation signed a memorandum of understanding (MoU) with Bangladesh Institute of ICT in Development (BIID) for deployment of the Intel Easy Steps Program in Bangladesh. The Intel Easy Steps program offers adult learners the opportunity for enhanced social and economic self sufficiency through digital literacy. The Intel Easy Steps materials use adult learning techniques to teach practical and applicable skills to people with minimum computer knowledge. The Intel Easy Steps program is being carried out by Intel in Asia to address the digital literacy

needs of government employees, as well as adults in rural communities, women, unemployed youth, and other underserved populations. A government needs ICT-literate labor for a competitive workforce which would bring about a competitive economy. On the other hand participants have an opportunity to improve skills thus enhancing their employment prospects. The program includes instructions on running Internet searches, using email, using word processors for creating resumes and other documents, creating spreadsheets, and using multimedia tools to create brochures and posters to promote small businesses. Thus the trainees can develop literacy skills and immediately start applying them into their personal or professional lives. BIID will facilitate value added services for the trainees to end up with a job opportunity or get self employed with support from relevant stakeholders.

In November 2009, Telenor mobile operator Grameenphone partnered with Microsoft to increase digital literacy among the rural people in Bangladesh. Microsoft's Digital Literacy Curriculum is a well-established e-learning module which teaches people basic computer skills, helping them to develop new social and economic opportunities for themselves, their families and their communities. All the content of the curriculum is in Bengali and aimed particularly at rural students, unemployed youth and women. The curriculum is disseminated through more than 500 authorised Community Information Centers (CICs) as well as through other vehicles of Grameenphone initiatives – school cyclone shelters, Information Boats and other educational institutions – across Bangladesh.

Users are able to access computers and learn through online digital literacy resources. They may also take online assessment tests through the CIC website. Successful candidates will be presented with a certificate of their achievement.

Microsoft is providing this digital literacy curriculum – including the examination – free of cost for this initiative. Through this partnership, Grameenphone and Microsoft are seeking new ways to enable people to use information and computer technology in everyday life. The socioeconomic benefits of this may be tremendous.

Education System in Bangladesh

The educational system in Bangladesh is three-tiered and highly subsidized. The government of Bangladesh operates many schools in the primary, secondary, and higher secondary levels. Tertiary education in Bangladesh takes place at 34 government, 78 private and 3 international universities. Students can choose to further their studies in Chartered Accountancy, engineering, technology, agriculture and medicine at a variety of universities and colleges. In the tertiary education sector, the government also funds more than 15 state universities through the University Grants Commission. (Wikipedia)

3.3 Public University

Bangladesh has some thirty-four public universities providing education to the bulk of higher studies students. These universities are funded by the government while managed as self-governed organizations. In Dhaka division there are twelve public universities.

University of Dhaka

For the purpose of the study University of Dhaka is selected as a sample from the population of 34 public universities. The University of Dhaka, established in 1921, is the oldest university of the country. Bangladeshi universities are affiliated with the University Grants Commission, a commission created according to the Presidential Order (P.O. No 10 of 1973) of the Government of the People's Republic of Bangladesh. 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 was set up in a picturesque part of the city known as Ramna on 600 acres of land. 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, 71 Departments, 10 Institutes, 17 dormitories, 3 hostels and more than 38 Research Centres. The number of students and teachers has risen to about 33,112 and 1,805 respectively. Presently the University enrolls more than 5,800 students, on merit basis, in the first year Honours Program in different Departments of the Faculties and the Institutes. Besides conducting teaching courses in the 4-year Bachelor and 1-year Masters Programmes, the University also trains up a large number of researchers in different disciplines. More than 842 Ph.D. and 673 M.Phil. researchers have obtained their degrees from this University.

Faculties and Departments

There are thirteen faculties that offer undergraduate and graduate, M.Phil and Ph.D programs:

Faculty of Arts, Science, Law, Business Studies, Social Sciences, Biological Sciences, Pharmacy, Earth & Environmental Sciences, Engineering & Technology, Faculty of Fine Arts, Faculty of Medicine, Faculty of PGMIR, and Faculty of Education.

Some of the details of the faculties are introduced below from which data has been collected for the purpose of conducting this study.

Faculty of Arts

Established in 1921, the Faculty of Arts, one of the largest faculties of the university, consists of sixteen Departments: Department of Bengali, Department of English, Department of History, Department of Islamic History and Culture, Department of Philosophy, Department of Information Science and Library Management, Department of Arabic, Department of Islamic

Studies, Department of Sanskrit, Department of Pali and Buddhist Studies, Department of Persian Language and Literature, Department of Urdu, Department of Language Science, Department of Theatre, Music, and Department of World Religions. The academic activities of these departments are conducted by the Faculty of Arts.

Four research journals, two in Bengali and two in English are published every year from the Faculty.

Faculty of Science

The Faculty of Science started its journey in 1921 with only three departments namely, Physics, Mathematics and Chemistry. The Faculty of Science offers four year B.S. Honours course and one year M.S. course (both in thesis and non-thesis group). This Faculty is also offering two year M. Phil. degree and three year Ph. D degree. Faculty of Science has awarded M. Phil. degree to 109 students and Ph. D degree to 154 students since its inception. Departments under the Faculty of Science:(1) Physics, (2) Mathematics, (3) Chemistry, (4) Statistics, Biostatistics and Informatics, (5) Theoretical Physics and (6) Biomedical Physics and Technology.

Internationally recognised Professor S. N. Bose of Physics, QaziMotar Husain of Statistics, M. H. Khundkar of Chemistry was associated with this Faculty. These eminent scientists made extraordinary contributions in Science. Two research centres are running under the Faculty of Science, namely Bose Centre for Advanced Study and Research in Natural Sciences (Director: Professor Shamima K Chowdhury), and Semiconductor Technology Research Centre (Director: Professor Dr. A.K.M. MaqbulurRahman). The Centre provides research grants for Faculty members. The Chairman, Department of Chemistry is the Director of Organic Pollutant Research Centre.

The Faculty of Science regularly publishes, The Dhaka University Journal of Science twice a year.

Faculty of Business Studies

The Department of Commerce was established under the Faculty of Arts of the University of Dhaka in the year 1921. This Department emerged as an independent Faculty in 1970 with only two Departments the Department of Management Studies and the Department of Accounting Information System in 1970. The Department of Marketing and the Department of Finance were created in 1974. The semester system was introduced in this Faculty from the session 1977-1978. The Faculty of Commerce was renamed as the Faculty of Business Studies in 1995. During 1994-95, the names of the B.Com.(Hons.)and M.Com degrees were changed to BBA and MBA degrees respectively. From the same academic session, the 4-year BBA Program was introduced in place of 3-year B.Com. (Hons) Program.The one-year M.Com. Program was also renamed as MBA Program. During the year 2004, two more Departments were created under this Faculty namely, the Department of Banking and the Department of Management Information Systems (MIS). During the academic session 2007-2008, two other Departments were also added to this Faculty namely, the Department of Tourism & Hospitality Management and the Department of International Business. At present there are 153 teachers, 10 Officers and 58 employees and around 6,092 students in the 8 Departments under the Faculty of Business Studies. The MBA (Evening) Program started functioning under this Faculty in February, 2002. At present a total of 560 students are being admitted per batch (70 students in each Department) in this Program. One Faculty level half-yearly journal is published under the title Journal of Business Studies. The following Departments also publish their annual Departmental Journals under the titles mentioned against the respective Departments:

Departments	Titles of the Journals
Management Studies	Journal of Management
Marketing	Journal of Marketing
Finance	Journal of Finance
Banking	Journal of Banking & Financial Services
Management Information Systems	Bangladesh Journal of MIS

Faculty of Social Sciences

The Faculty of Social Sciences was established in 1970. The Faculty consists of eleven departments: Department of Economics, Department of Political Science, Department of International Relations, Department of Sociology, Department of Mass Communication and Journalism, Department of Public Administration, Department of Anthropology, Department of Population Sciences, Department of Peace and Conflict Studies, Department of Women and Gender Studies and Department of Development Studies. The academic activities of these departments are conducted by the Faculty of Social Sciences. The departments under the Faculty offer four-year Bachelor of Social Sciences (BSS) and one-year Master of Social Sciences (MSS) degrees with the exception of the Population Sciences and Development Studies Departments. These two departments offer only two-year professional Master's degrees called MPS and MDS respectively. Moreover, the Faculty offers a two-year M.Phil and three-year Ph.D. degree in all disciplines.

The Faculty publishes Social Science Review (Dhaka University Studies, Part-D), a bi-monthly journal. The faculty has decided to publish a Bengali journal entitled Social Science Patrika from

the next academic session. From the session 2004-2005, the faculty started publishing a quarterly named Social Science Newsletter edited by the Dean.

Research

The University of Dhaka is dedicated to the advancement of learning and is committed to promote research in all fields of knowledge. New research projects are undertaken every year. Six half-yearly English journals are published by six faculties regularly. Research journals are published by individual departments, institutes, and centers. The University of Dhaka entered into International Collaboration Programmes with 56 renowned Universities and Institutes of different countries of the world.

Bureau and Research centre

There are thirty-four research centers which engage faculties and students from the university at large. All the centers provide assistance to the faculty members and research students to conduct research on the key issues of their relevant fields.

3.4 Private University

Establishment of private university in Bangladesh initiated after the institution of the *Private University Act 1992*. There are 54 such universities that are operational in five out of seven division of the country. Most of the private universities are in Dhaka Division summing up to 45.

Solely for the purpose of this study, American International University- Bangladesh (AIUB) has been selected as a sample for data collection, because it is one of the earliest private universities that were established in Bangladesh.

American International University-Bangladesh (AIUB)

American International University - Bangladesh (AIUB) is a government approved private university founded in 1994 by Dr. AnwarulAbedin. The university is an independent organization with its own Board of Trustees. American International University-Bangladesh (AIUB) is committed to provide quality and excellent computer-based academic programs responsive to the emerging challenges of the time. It is dedicated to nurture and produce competent world class professional imbued with strong sense of ethical values ready to face the competitive world of arts, business, science, social science and technology.

Faculties

AIUB currently operates under four distinct Faculties:

Faculty of Arts and Social Science (FASS)

Faculty of Business Administration (FBA)

Faculty of Engineering (FE)

Faculty of Science and Information Technology (FSIT)

A short description of the various faculties and the departments that operates under these faculties is provided below.

Faculty of Arts and Social Science (FASS)

Echoing with the global demands, AIUB has established the Faculty of Arts and Social Sciences (FASS) to ensure high professionally creative education for aspiring students. For quality education, the university has pooled highly experienced and accomplished professionals from home and abroad. Further, it makes it point to organize regular field visits, seminars, study circles, workshop etc. so that students' learning is underpinned by first hand experiences for their

sound and solid knowledge and expertise. Under this faculty operates the departments of Economics, English, and Mass Communication.

Undergraduate Programs

- Bachelors of Arts in Media and Mass Communication
- Bachelors of Arts English
- Bachelors of Social Science in Economics

Graduate Programs

- Masters in Public Health (MPH)

Faculty of Business Administration (FBA)

The university plays an important role in this aspect of educating and providing relevant experiences to the students who are in quest for globally competitive knowledge and skills to cope with the emerging challenges in the world of business. The Faculty of Business Administration is one of the prosperous faculties of the university. It is continuously restructuring its curricular program and courses; upgrading faculty competencies; facilities improvements and adapting new teaching strategies in response to the needs and demands of the times.

The academic programs of the Faculty of Business Administration are tailored made to suit the current and future needs of the students in the view of the fast growing global business climate. Students are honed and developed to meet the diverse demands of the business sector by offering courses that are relevant to build their career.

Undergraduate

Bachelor in Business Administration (BBA)

Majors in:

Accounting and Finance

Economics
Human Resource Management
International Business
Investment Management
Management
Management Information Systems
Marketing
Operations Management
Tourism and Hospitality Management

Graduate

Master of Business Administration (Regular)

Major in:

Accounting

Agribusiness

Business Economics

Finance

Human Resource Management

Management

Management Information Systems

Marketing

Operations Management

Executive Master of Business Administration

Faculty of Engineering (FE)

Electrical and Electronic Engineering is concerned with the design, research, development, planning, manufacture and management of systems and devices relying on electricity and light to transmit data and power which underpin modern economies and contribute to the quality of human life. Currently, more than 3000 students have been pursuing their four years undergraduate studies in the department of Electrical & Electronic Engineering. The Master programs in Electrical and Electronic Engineering, Telecommunication Engineering and Computer Science are designed with advanced specialized courses and to provide research opportunities to students as well as Faculty members.

Undergraduate Programs:

- Bachelor of Science (B.Sc.) in Electrical & Electronic Engineering (EEE)
- Bachelor of Science (B.Sc.) in Architecture (BArch)

Graduate Programs:

- Master of Engineering in Telecommunications (MTEL)

Faculty of Science and Information Technology

Under this faculty are the departments of Computer Science, Computer Science and Engineering, Software Engineering, Computer Science and Software Engineering.

Undergraduate Programs:

- Bachelor of Science (B.Sc.) in Computer Information Systems (CIS)
- Bachelor of Science (B.Sc.) in Computer Science (CS)
- Bachelor of Science (B.Sc.) in Computer Science and Engineering (CSE)
- Bachelor of Science (B.Sc.) in Computer Science and Software Engineering (CSSE)
- Bachelor of Science (B.Sc.) in Software Engineering (SE)

Graduate Programs:

- Master of Science in Computer Science (MSCS)

Research

The Office of Research and Publications ORP envisions to explore research-based educational practices through conducting research activities on potential industrial issues, organizing seminars and talks on contemporary issues, arranging for publications of international journals, i.e., AIUB Journal of Business economics AJBE and AIUB Journal of Science and Engineering AJSE, as well as of other professional materials including the official magazine, newsletters and occasional souvenirs. ORP aims to foster the culture of research and writing among the AIUB students and faculty members, and promote AIUB's linkage with international intellectual communities. The continuation of the existing Journals and the official magazine contribute to gradually develop the culture of publication of the University. In future, the area of publication will be broadened in different categories like research based text, working papers, sports, cultural activities, literature, occasional papers, and others.

AIUB Journal of Business and Economics [AJBE] is a publication of the School of Business, American International University-Bangladesh [AIUB]. This journal publishes original, empirical and innovative materials in functional and support areas of business and economics. It is primarily devoted to the extension and further development and dissemination of knowledge in

the field of business and economics for the benefit of academics as well as practicing enterprise managers. The journal is published twice a year in English in months of January and August.

AIUB Journal of Science and Engineering [AJSE] is a joint publication of the AIUB Faculty of Science and Information Technology and the AIUB Faculty of Engineering. This journal publishes original, empirical and innovative works in basic, functional and support areas of science, technology and engineering disciplines. It is primarily devoted to the extension and further development and dissemination of knowledge in the field of science and engineering for the benefit of academics as well as practicing enterprises based on research and development [R&D].The journal is published once a year in English in the month of August. Scope of publishing special issues is kept open for future needs.

3.5 Conclusion

Both the universities that were selected as sample from a wide population have excellent academic history, tremendous research progression in various fields and the students of these universities are assumed to be as perfect samples for rest of the other universities present. Therefore for the sole purpose of the study personal visits to the university campuses, interaction with the students brought about many interesting facts about both the public and private university students that helped in conducting a more reliable study.

CHAPTER IV

Literature Review

4.1 Introduction

The review explores how the concept of digital literacy (DL) emerged, how it has been defined and the discourses that have contributed to its development in the education system. The role of digital technology in the lives of the University students are explored, and this is followed by an overview of the perceptions of students and teachers of digital literacy. The literature reviewed, did not cover all the various aspects of the concept of DL but only those related to the topic of this study. Searches were conducted in online publishers and databases like Sage, Emerald, ERIC, Elsevier, LISTA and E-journal and in other search engines like Google, Google Scholar using various books, magazines and journals on DL, as well as organizational websites like CILIP, were also consulted to get different views on the topic. Only articles and other materials written in English language were consulted. Originally, there was no range limit in terms of dates for materials retrieved but in order to get current information on the topic, the search was later narrowed to materials ranging. As a result, few materials related to the topic were retrieved.

Literature review is the most crucial part before conducting any research, which gives necessary input to the researcher to frame the study on the chosen topic. To determine the proposed study, a number of literatures have been reviewed. It is mainly based on primary and secondary sources of information. Ferfolja and Burnett of the University of New South Wales, Australia defined a literature review as an “examination of the research that has been conducted in a particular field of study”. Hart (2003) agrees with this notion but expanded its definition to “the selection of

available documents...and the effective evaluation of these documents in relation to the research being proposed”. Cooper (1984) defines “a literature review uses as its database reports of primary or original scholarships, and does not report new primary scholarship itself. The primary reports used in literature may be verbal, but in the vast majority of cases reports are written documents. The types of scholarship may be empirical, theoretical, analytic, or methodological in nature. Second a literature review seeks to describe summaries, clarify of primary reports”. An initial review of the literature and electronic resources was conducted by searching the print indexes and electronic database using combinations of keywords such as DL, DL skills of students, DL in Bangladesh and so on. The literature search produced a plethora of writing on the concept of DL.

4.2 “Literacy” and “Multi Literacies or New Literacies”

The meaning of literacy has been elaborated within education over the last forty years. Prior to the 1970s it principally referred to how individuals learn to decode, encode and comprehend printed alphabetic texts.(Bawden 2008). Since then its meaning has become extended to include the social practices surrounding reading and writing. Lankshear and Knobel define literacies (using the plural form) as ‘socially recognized ways in which people generate, communicate, and negotiate meanings, as members of discourses, through the medium of encoded texts’(Lankshear and Knobel 2003: 33). Contemporary educational debate reflects the broad background of the concept of literacy. Literacy was born and evolved within the cognitive perspectives, in which reading, writing, and numeracy were the main concerns. The critical literacy of Freire (1993) and sociocultural perspectives of Street (1985) questioned the conventional mindset of literacy. Freire (1993) viewed literacy as not only “reading the word”

but also “reading the world” which refers to offering an alternative to conventional literacy that should be based on dealing critically with the reality of the world in terms of its political structure so that the learners could participate in or strive for social change. Similarly, Street (1985) viewed literacy as contextualized and defined it as a social practice. As a result, the notion of literacy expanded to include not only a set of cognitive skills but also socio-political or socio-cultural practices. With the rapid growth of technology, other theoretical perspectives of literacy were developed to conceptualize literacy in the new era. Multiliteracies, a term coined by the New London Group in 1966, is one of these perspectives, and argues that individuals need to have more than one literacy to decode information from multiple modalities such as text, images, sounds, videos, and maps (Ng, 2012). Another perspective is the concept of “new literacies.” According to Lankshear and Knobel (2003), “new literacies” refers to practices that are either associated with digital technologies or with the constantly changing social contexts. Overall, the focus is on the social practices that result from the new technologies (Ng, 2012). Rebmann (2013) notes that there are similarities and differences between multiliteracies and new literacies. He notes that these approaches are similar because they are both rooted in the critical and social practice of literacy as they emphasize the structure or contexts that shape learners and educators. These contexts might include power, economics, or technology. The two approaches are different because multiliteracies emphasize multiplicity of discourses, whereas new literacies emphasize the concept of newness as the new contexts developed by the new technologies. Lankshear and Knobel (2011) add that new literacies emphasize not only the notion of newness but also the meaning of literacy, which is under constant change due to the changing nature of technology. Ng (2012) points out that the concept of new literacies is relatively new and new literacies are digital literacy characterized by new technologies. In summary, the emergence of

various movements in literacy redefined the concept of literacy in many ways. Information literacy is composed of two components: information and literacy. Certainly, any changes of understanding of each component will definitely change the whole concept. Due to new changes of perspectives, literacy is being released from the single perspective approach of conventional literacy, which was in the cognitive realm of reading and writing. Today's literacy is multiple in essence. It is believed to be socially constructed. Technology, and the potentials it offers, has become central to literacy. Literacy, indeed, became more than one. We are now dealing with literacies incorporating all as one. Just like general literacy, information literacy was also dominated by a cognitive perspective to which information was defined within the content of a document presented to a user (Savolainen, 2009). Bringing the new and broader understanding of literacy clears the ground and paves the road for information literacy to evolve and go beyond the cognitive realm. The consulted literatures progressed from a definition of 'literacy' into definitions of new "literacies" that are needed to deal with our ever-increasingly complex world.

4.3 Defining "Digital Literacy"

Defining digital literacy (or literacies) is difficult given the contested and common sense understanding of literacy described above and the host of competing terms in the arena of new technology - these include information literacy, computer literacy, internet literacy and hyper-literacy. In addition, the object of digital literacy is constantly moving; as Helsper comments, definitions keep changing because the digital and cultural environment keeps changing (Helsper2008). This means there will always be a degree of ambiguity in the use of the term, what Zacand Diana refer to as the 'inherent squishiness' of digital literacy (Zac and Diana 2011).The concept of digital literacy was introduced by Paul Gilster in his book of the same name(Gilster 1997). Gilster took a broad approach to digital literacy defining it as 'the ability to

understand and use information in multiple formats from a wide range of sources when it is presented via computers' (ibid: 1). He argued that literacy has always been more than simply being able to read and acknowledged cultural aspects in all forms of literacies. Although the narrow reference to 'computers' now sounds a little dated, Glister's definition is still useful, given that it goes well beyond a skills - based understanding of digital literacy . However, this definition pre-dated the emergence of Web 2.0 technologies. Now, 'many time-honoured distinctions such as between producer and consumer, writer and reader blur or virtually disappear as new syntheses emerge' (Gillen and Barton 2010: 4). This technological change and its social consequences are reflected in more recent definitions of digital literacy. Future reports on digital literacy have mapped and contributed to this development (Grant 2009; Williamson and Hague 2009; Hague and Payton 2010). Digital literacy, they suggest, means: knowing how technology and media affect the ways in which we go about finding things out, communicating with one another, and gaining knowledge and understanding. And it also means understanding how technologies and media can shape and influence the ways in which school subjects can be taught and learnt. (Williamson and Hague 2009: 5) The concepts of 'information literacy' and 'digital literacy' are summarized in a review of literature and subsequently analyzed. Definitions including computer literacy, library literacy, network literacy, internet literacy, and hyper literacy were also referred throughout the study.

Eshet's article focused to provide a terminology framework of digital literacy—or to disaggregate the meaning so that each described characteristic results in a cumulative definition of the term. According to Eshet, the four components of digital literacy are:

- Photo-visual literacy
- Reproduction literacy

- Lateral literacy
- Information literacy

Additionally Eshet presented the results of a study that examined the extent to which learners effectively utilize digital literacy in educational contexts. Some of the findings suggest that younger (14-15 year old) participants were the best users of photo-visual information and showed the highest level of lateral literacy; older participants demonstrated a higher level of reproduction and information literacies. These studies were frequently consulted for analyzing the related skills and components of DL that are dealt with in this study.

4.4 Digital Natives

The technological advances, specifically digital technology has prompted swift and radical change in the world we know. With such change, today's students "think and process information fundamentally differently from their predecessors". Prensky has created a new term, *Digital Natives*, to describe the high-tech, digitally-proficient youth of today. He recognizes that today's students are native speakers of a digital language. For the rest of the world, those not born in the e-generation, and therefore not digitally-literate, Prensky has created the term, *Digital Immigrants*. Because technology is not the natural language of this cohort, they are less adept at utilizing it. According to Prensky, ". . . the single biggest problem facing education today is that our Digital Immigrant instructors, who speak an outdated language (that of the pre-digital age), are struggling to teach a population that speaks an entirely new language". Since Prensky (2001) coined the term, a considerable amount of discussion in education circles has centered on the Digital Natives. The arguments have changed little from that has been originally posed by Prensky: the digital culture in which the Digital Natives have grown has influenced their

preferences and skills in a number of key areas related to education. (Oblinger 2003' 2006; Gros 2003; Gibbons 2007).Prensky's stance has also remained unaltered over this period; he states in a recent article "...our students are clamoring for these (new) technologies to be used as part of their education, in part because they are things that the students have already mastered and used in their daily lives; and in parts because they realize just how useful they can be (Prensky, 2007). Digital natives are said to prefer receiving information quickly; be expert at processing information rapidly; prefer multi-tasking and non-linear access to information; have a low tolerance for lectures; prefer active rather than passive learning; and rely heavily on communication technologies to access information and to carry out professional and social interactions. (Prensky 2001; Oblinger 2003, Frand 2000)

4.5 Digital Literacy Skills

Ulicsak (2004) introduces the reader to key questions related to digital literacy, including assessing the skills needed to ensure competency. The study, an EU-funded project, looks at challenges within school practices and the new digital tools needed today. The author frames the study and article on a common understanding of digital literacy. According to Ulicsak, digital literacy refers to proficiencies needed to utilize digital technology. A useful aspect of the author's research is a list of activities which require at least a modicum of digital literacy. These include:

- *modeling*- the creation of digital analogues of systems for analysis and experimentation
- *knowledge management* - conducting research, combining knowledge to create new knowledge, navigating through information structures

- *multimodality and hypertext* - new ways of creating communicative documents combining different modes and media and new ways of reading them
- *electronic communication* - not just e-mail but a whole panoply of ways in which inter-human communication is developing and how entry into communities of learners may be dependent on electronic communication
- *game play* - the ways in which playing digital games exemplifies ways of thinking and working in a digital domain, and is potentially a summation of the above activities.

Eshet has established a holistic conceptual model for digital literacy, arguing that it covers most of the cognitive skills that users and scholars employ in digital environments and, therefore, providing researchers and designers of digital environments with a powerful framework and design guidelines. The model consists of the five digital literacy skills:

- Photo visual skills,
- reproduction skills,
- branching skills,
- information literacy skills, and
- socio-emotional literacy skills.

From this perspective, it is clear that digital literacy does not refer to one single type of literacy, but to multiple sets of new literacies. Photovisual literacy refers to our ability to read visual representations of the digital environment incorporating text, sound, images, and symbols. Reproduction literacy signifies our ability to create and reproduce knowledge from the existing rich information environment. Information literacy focuses on our ability to access, find, and particularly evaluate information coming from a large number of sources. Branching literacy

looks at hypermedia and the ability we need to navigate in the interactive and non-linear world of hypermedia. Finally, it is not all about technological and cognitive literacy, but about social and emotional literacy, which provide us the ability to behave appropriately in cyberspace.

Contrary to Eshet-elkai (2004), Gilster (1997)'s book on digital literacy does not provide any list of what digital literacy should contain, but Bawden (2001) derived the following set of competencies from Gilster's (1997) anecdotal description of digital literacy:

- Critical thinking skills for evaluating retrieved information
- Reading comprehension skills for materials available in dynamic hypertextenvironment
- Knowledge assembly skills for collecting information from diverse sources.
- Online searching skills
- Problem solving skills
- Communication and online publishing skills
- Awareness of people online as sources of advice and assistance
- Awareness of the traditional resources in connection with new media.
- Managing information flow with filters.

Lankshear and Knobel (2003) identify three dimensions common to digital literacies: operational, cultural and critical. Operational includes competence with tools and procedures; cultural refers to competence in understanding texts in relationship to cultural context and critical is the awareness that literacies are socially constructed and selective including some values and excluding others. By analyzing the relevant literatures a wide range of DL skills and competencies were found that are used to have a clear understanding of various DL skills of the 21st century.

4.6 Digital Literacy of University Students

Quite a few numbers of studies were carried out to determine the technological usage by the students of this century. Some of which dealt with school students, elementary students and others. As this study is narrowed down to the digital literacy skills of University students, therefore only the related studies and literatures were consulted. Margaryan and Littlejohn (2009) investigated the extent and nature of university students' use of digital technologies for learning and socialising. They found that students use a limited range of mainly established technologies. Use of collaborative knowledge creation tools, virtual worlds, and social networking sites was low. 'Digital natives' and students of a technical discipline (Engineering) used more technology tools when compared to 'digital immigrants' and students of a non-technical discipline (Social Work). This relationship may be mediated by the finding that engineering courses required more intensive and extensive access to technology than Social Work courses. However, the use of technology between these groups is only quantitatively rather than qualitatively different. The study did not find evidence to support popular claims that young people adopt radically different learning styles. Their attitudes to learning appear to be influenced by lecturers' teaching approaches. Students appear to conform to traditional pedagogies, albeit with minor uses of tools delivering content. The outcomes suggest that although the calls for transformations in education may be legitimate it would be misleading to ground the arguments for such change in students' shifting patterns of learning and technology use. Sieberhagen and Cloete (2012) reported on the evaluation of a digital information literacy program (DILP) to determine the program's effectiveness in enhancing students' digital information literacy skills. The DILP was originally designed and developed for the South African student, as member of Generation Y, but was adapted after identifying the characteristics

of Generation Z. New learning technologies were identified and incorporated in the DILP to enhance students' learning experience. An analysis of reported research indicated that there is a lack in the evaluation of programs to determine their effectiveness in enhancing the digital information literacy skills of students by using an outcomes assessment instrument. The development of an outcomes assessment instrument, which is based on internationally benchmarked information literacy competency standards and their outcomes, are presented. Evidence is provided of the effectiveness of the program in order to prove its worth as an instructional program. Recommendations are made on how digital information literacy programs may be improved to be more effective in enhancing students' digital information literacy skills. Focusing on a pilot study in Oakville and a longitudinal research study in Sydney, Australia, Rowsell and Walsh (2011) compelled the readers to think about literacy in a new light. Without a push to redefine literacy, educators run the risk of teaching and learning language and literacy skill in anachronistic paradigms and frameworks. While research has not been able to fully establish the impact of multimodal communication, it is essential that educators learn to use these different modes of communication to teach literacy. They presented a theoretical overview of new fields of research, pedagogy, and practice in literacy education. In a digital, media-driven, globalized world, educators are faced with the challenge of mediating traditional notions of what it means to be literate (e.g., read and writing print-based texts) with new and ever-emerging skills and interests in technology and digital media.

The DigEuLit project, funded by the EC eLearning Initiative, has a task of defining digital literacy and developing a framework and tools for digital literacy development in European educational settings. They have observed converging literacies which have gained new relevance in digital environments, and proposed a definition of digital literacy which focuses on the

processes of using digital tools to support the achievement of goals in the individual's life-situation. In the e-permeated society, a society also increasingly unpredictable and uncertain, "digital literacy" becomes not only a key factor in enabling participation in education, as well as employment and other aspects of social life, but also a means of gaining some understanding of the world.

4.7 Digital Literacy in Bangladesh

Not much scholarly literatures relevant to the study topic could be retrieved for this section. The study was conducted by consulting the policy draft papers, some online materials, statistical reports and Government websites. Throughout the study some of the DL project initiatives were came across. The Intel Corporation signed a memorandum of understanding (MoU) with Bangladesh Institute of ICT in Development (BIID) for deployment of the Intel Easy Steps Program in Bangladesh. The Intel Easy Steps program offers adult learners the opportunity for enhanced social and economic self sufficiency through digital literacy. The Intel Easy Steps materials use adult learning techniques to teach practical and applicable skills to people with minimum computer knowledge. The Intel Easy Steps program is being carried out by Intel in Asia to address the digital literacy needs of government employees, as well as adults in rural communities, women, unemployed youth, and other underserved populations. A government needs ICT-literate labor for a competitive workforce which would bring about a competitive economy. On the other hand participants have an opportunity to improve skills thus enhancing their employment prospects. The program includes instructions on running Internet searches, using email, using word processors for creating resumes and other documents, creating spreadsheets, and using multimedia tools to create brochures and posters to promote small

businesses. Thus the trainees can develop literacy skills and immediately start applying them into their personal or professional lives. BIID will facilitate value added services for the trainees to end up with a job opportunity or get self employed with support from relevant stakeholders.

In November 2009, Telenor mobile operator Grameenphone partnered with Microsoft to increase digital literacy among the rural people in Bangladesh. Microsoft's Digital Literacy Curriculum is a well-established e-learning module which teaches people basic computer skills, helping them to develop new social and economic opportunities for themselves, their families and their communities. All the content of the curriculum is in Bengali and aimed particularly at rural students, unemployed youth and women. A detailed discussion of these projects is carried out in the body of this thesis paper.

4.8 Conclusion

The literature review began with defining the terms Literacy, Multi Literacies and New Literacies. Next, the study moved on to define Digital Literacy and Digital Literacy skills. Later the study discussed the relationship between digital literacy and University students. The research continued to confirm that technological changes are present all around us and conclude with the importance of keeping up with those changes in order to thrive in modern society. Then, literature were reviewed on variables that increase or impede adaptation and progress in digital literacy skill acquisition.

Hurdles are faced while reviewing literatures on the topic of Digital literacy in Bangladesh. Scholarly publications or any writing on this area is seen to be missing. The study topic is focused on DL skills of University students particularly; therefore no such literature could be

consulted on this area. There are a few limitations that were undergone during this literature review writing as reviewing and retrieval were only restricted to certain important concepts that are dealt within the main study of this thesis.

CHAPTER V

Methodology

Since the beginning of this study a methodological approach has been adopted for the progress of the study. Starting from the literature review to selecting the appropriate methodology for sample determination, data collection, the tools and techniques for data collection all has undergone certain course of action. For better analysis and reliability of the results and for satisfying the research objectives proper methodology is integral to a research. This chapter deals with the aspects of the methodologies that were followed for conducting an authentic and reliable research.

5.1 Survey

The survey method was used as a means to collect data on the digital literacy of students of the private and public universities. A survey is a systematic way of gathering information from (a sample) of entities for the purpose of constructing quantitative descriptors of the attributes of the larger population of which the entities are members. The word “systematic” is deliberate and meaningfully distinguishes surveys from other ways of gathering information. The phrase “a sample of” appears in the definition because sometimes surveys attempt to measure everyone in a population and sometimes just a sample.

There are two key features of survey research:

- **Questionnaires** -- a predefined series of questions used to collect information from individuals
- **Sampling** -- a technique in which a subgroup of the population is selected to answer the survey questions; the information collected can be generalized to the entire population of interest.

5.1a) Questionnaires

A questionnaire is simply a 'tool' for collecting and recording information about a particular issue of interest. It is mainly made up of a list of questions, but should also include clear instructions and space for answers or administrative details. Questionnaires should always have a definite purpose that is related to the objectives of the research, and it needs to be clear from the outset how the findings will be used. Respondents also need to be made aware of the purpose of the research wherever possible, and should be told how and when they will receive feedback on the findings.

Questionnaire design

In order to gather useful and relevant information it is essential that careful consideration is given to the design of the questionnaire. A well-designed questionnaire requires thought and effort, and needs to be planned and developed in a number of stages. The development stages through which my questionnaire was given a final look is represented by the figure below; In the first stage the issues that must be determined before writing a questionnaire was identified, followed by the type of questions to be included, then the sequence in which the questions will

be arranged was also determined, lastly a revision of the draft questionnaire produced a final set of questionnaires that were used to collect data for the sole purpose of this study.

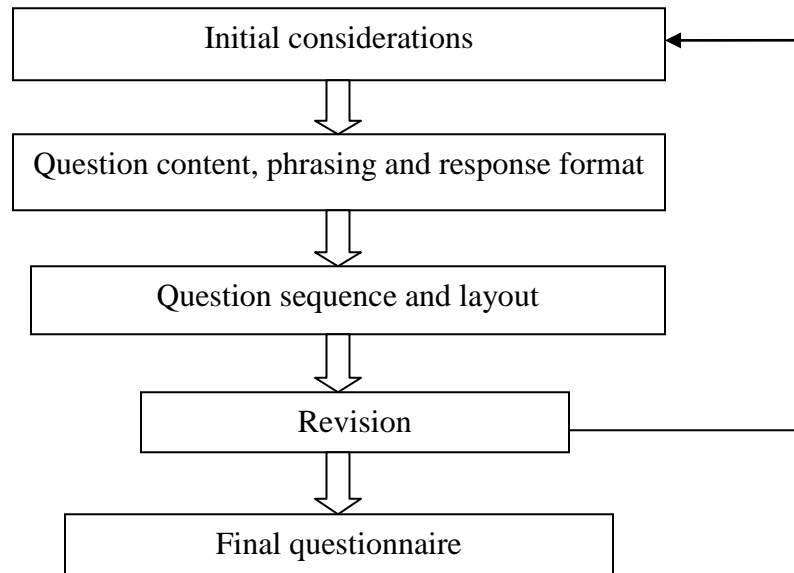


Fig5.1: questionnaire design process

The two most common types of survey questions are closed-ended questions and open-ended questions. For the purpose of this study a closed ended questionnaire was used where the respondents had to answer from the options provided. The questionnaire is composed of 22 questions amongst which there are demographic and academic information, age group and gender of the respondents, data about the respondents' computer usage, their familiarity with Internet related terms, various other skills to demonstrate each of the respondents' digital literacy skills.

5.1b) Sampling

From a large number of populations of 34 public universities and almost 54 private universities of Bangladesh only two universities were selected a representative to this voluminous population.

The University of Dhaka among the public universities was chosen because it is the first established and one of the highest ranking universities of Bangladesh and from the private universities AIUB is also one of the oldest and renowned universities in Bangladesh. Also the researcher's personal preference was involved in this decision. For sampling proportionate stratified sampling techniques was used. Therefore the sample students were classified based on their majors and university faculties. Then a sample element in proportion to their actual numbers in the overall population was selected. Based on this technique the research arrived to a sample of 80 students from 40 each.

5.1c) Distribution of the Questionnaire

The questionnaire was distributed hand in hand from person to person. Every respondent who was approached was first informed about the research theme and the purpose of this research. They were then ensured that the data that will be provided will be strictly used for the sole purpose of this study only. While distributing the questionnaire, the number of respondents from each faculty and the total number of respondents from both the sample universities were kept equal. The questionnaire was immediately collected after the respondents instantly filled them up in my presence. Any confusion with any question was answered by me to the respondents.

5.2 Analysis

After the data has been collected from both the Universities, each and every questionnaire was thoroughly revised for finding any problem that would regard the questionnaire as invalid for further analysis. After that progressive analysis of the questionnaire began. Starting from the demographic information to the students' ability in using internet, to their social networking behaviour was analyzed and the results were represented through statistical presentation, percentages, graphs, tables and charts. A detailed discussion of the analysis of data is provided in the next chapter of this study.

CHAPTER VI

Analysis and discussion of the study

Data analysis has largely been conducted on responses to the questionnaire that was distributed at the University of Dhaka (DU) and at the American International University-Bangladesh (AIUB). This chapter presents and discusses the results of the questionnaire survey. The questionnaire was made up of close-ended questions with responses ranging from YES/NO and Likert type of four points rating in which the respondents were required to choose from the options 'Very important', 'Important', 'Moderately important', 'Not important'. The questionnaire consisted of 22 questions but not all is assessed for the purpose of this study.

6.1 Analysis of the Questionnaire survey

The following were the findings from the questionnaire survey conducted, giving the percentages and number of responses for the various answers pertaining to each question. Each table represents the response rate and percentage from both DU and AIUB.

The tabulated data is then graphically represented by bar charts, pie charts, column charts etc.

Graphical representation is given for both the Universities separately whereas same the data has been tabulated into one table showing separate column for each.

Some selected questions from the whole questionnaire has been analysed below.

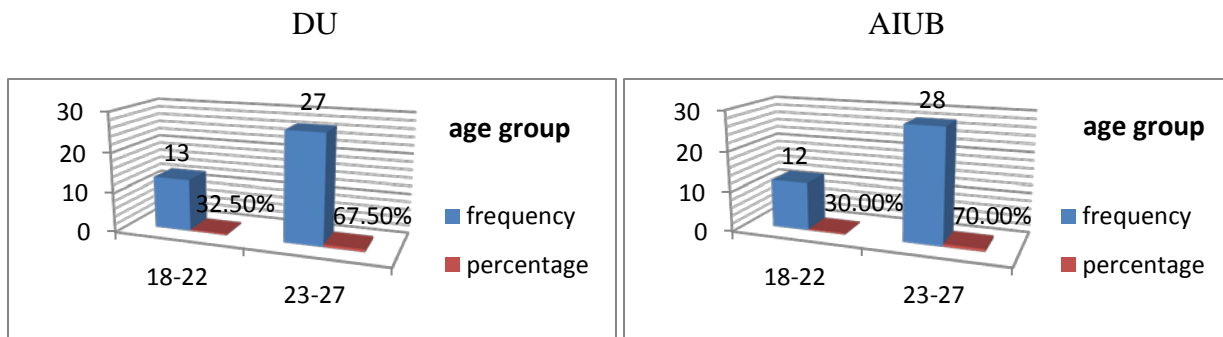
i) The following table shows the age group of the respondents from both the universities.

Table 1

Age group	DU		AIUB	
	Frequency	Percentage	Frequency	Percentage
18-22	13	32.5%	12	30%
23-27	27	67.5%	28	70%
28-32	-	-	-	-
Total	40	100%	40	100%

Table 1 indicates that 13 (32.5%) students aged between 18-22 years were from DU and 12 (30%) of students of the same age group were from AIUB. The largest group of students 27 (67.5%) comprised of those in the age group 23-27 years in DU and 28 (70%) students of the same age group were from AIUB. There were no respondents below that age from any of the Universities.

Graphical representation of age group:



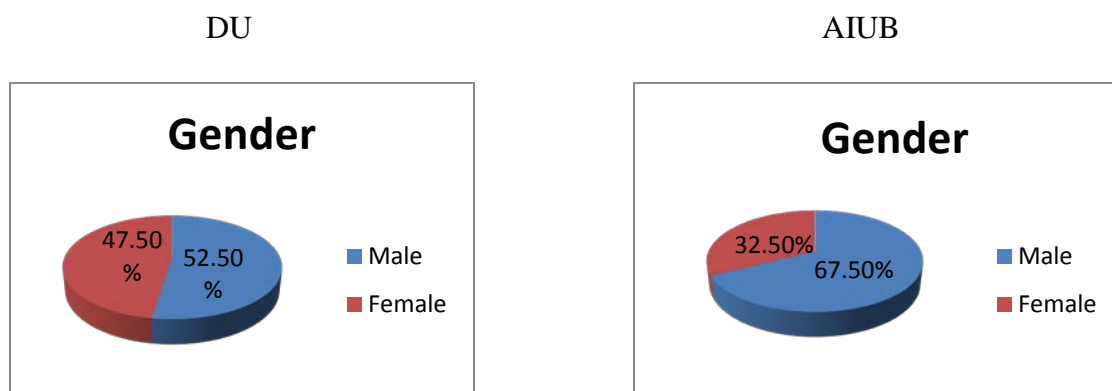
ii) The following table will show the gender of the respondents from each University.

Table 2

Gender	DU		AIUB	
	Frequency	Percentage	Frequency	Percentage
Male	21	52.5%	27	67.5%
Female	19	47.5%	13	32.5%
Total	40	100%	40	100%

Table 2 indicates that among 40 students in DU, 21 (52.5%) were male and 19 (47.5%) were female. In the same table the gender of AIUB respondents shows that 27 (67.5%) are male and 13 (32.5%) of respondents are female out of a total 40 respondents.

Graphical representation of the table:



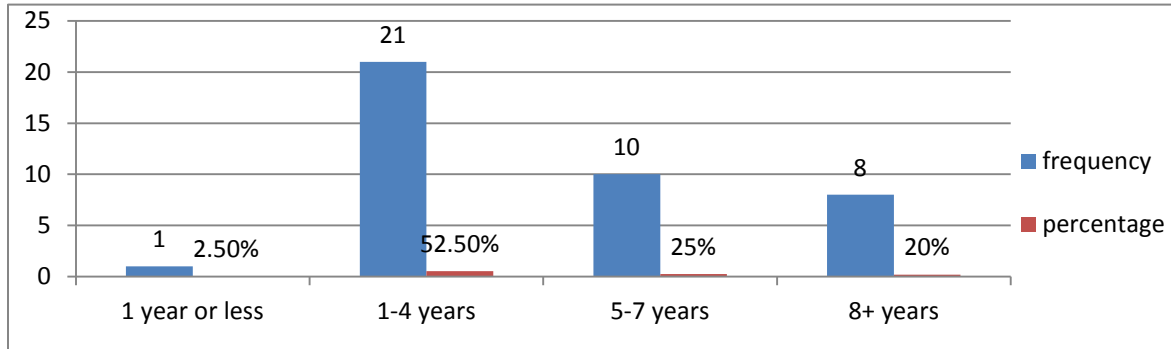
iii) How long have you been using computers for?

Table 3

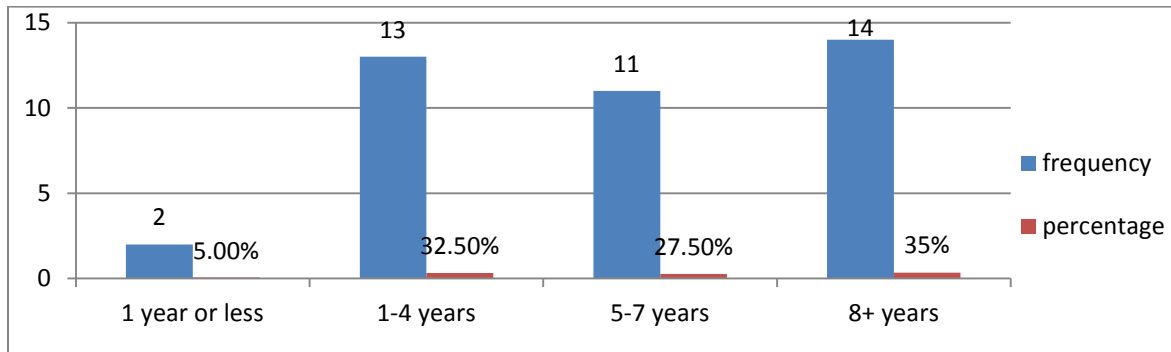
Time (Years)	DU		AIUB	
	Frequency	Percentage	Frequency	Percentage
Less than 1 year	1	2.5%	2	5%
1-4 years	21	52.5%	13	32.5%
5-7 years	10	25%	11	27.5%
8+ years	8	20%	14	35%
Total	40	100%	40	100%

In the above question the respondents were asked about the time length they have been using computers for? The maximum number of respondents i.e. 21 (52.5%) from DU are using computers for 1-4 years, and the maximum number of respondents 14 (35%) out of a total of 40 respondents from AIUB are using computers for 8 and more years. The minimum frequency of respondent from DU is 1 (2.5%) who has been using computers for less than 1 year, and the minimum frequency of respondents from AIUB are 2 (5%) who has been using computers for less than 1 year.

Graphical presentation of the data: DU



Graphical representation of the data: AIUB

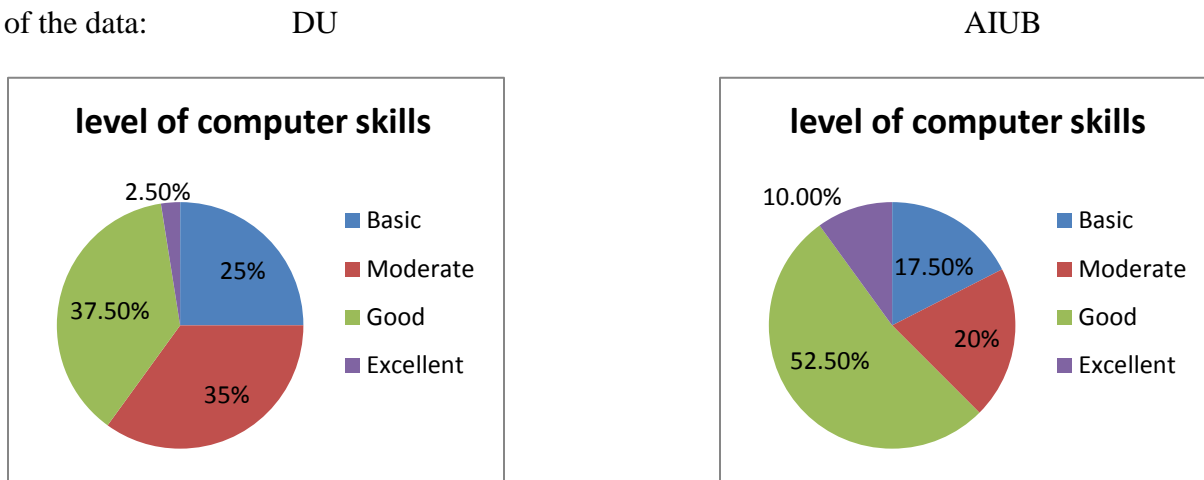


iv) How would you rate your computer skill level?

Table 4

Level of computer skills	DU		AIUB	
	Frequency	Percentage	Frequency	Percentage
Basic	10	25%	7	17.5%
Moderate	14	35%	8	20%
Good	15	37.5%	21	52.5%
Excellent	1	2.5%	4	10%
Total	40	100%	40	100%

In the above question the respondents were asked to rate their computer skill level, with range from basic, moderate, good to excellent. A maximum of 15 (37.5%) of respondents from DU rated their computer skill level as good, and only 1 (2.5%) respondent rated his computer skill level as excellent from a total of 40 respondents from DU. The maximum number of respondents 21 (52.5%) rated their computer skill level as good from AIUB, and 4 (10%) respondents rated their skill as excellent from a total of 40 respondents. Graphical representation of the data:



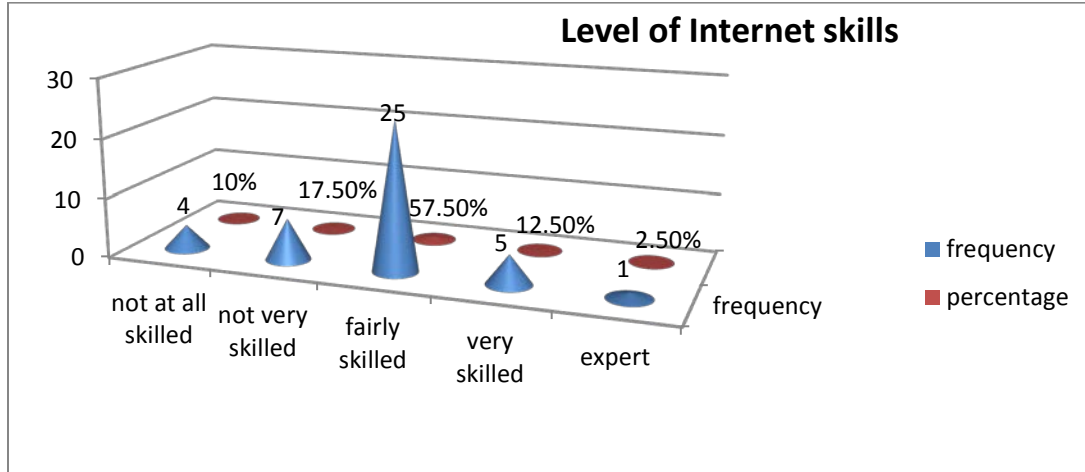
v) In terms of your internet skills, you consider yourself to be:

Table 5

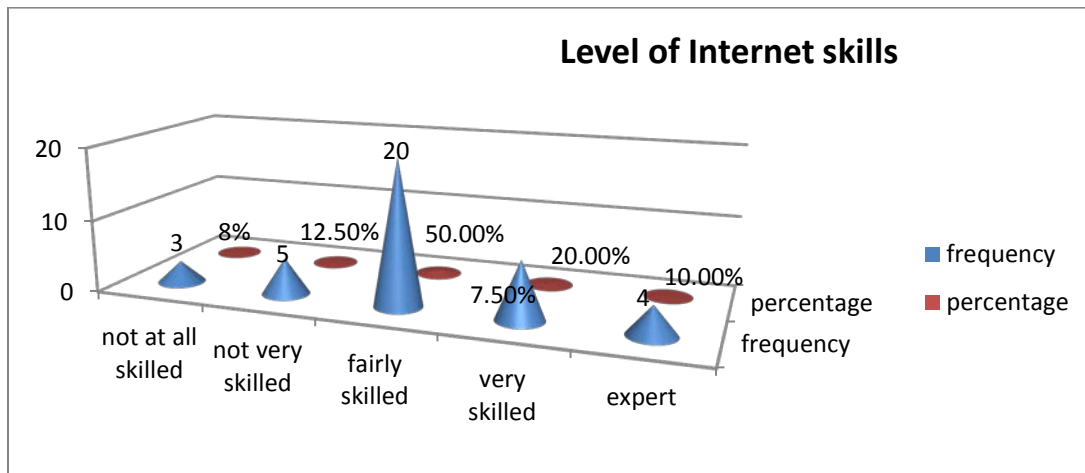
Level of Internet skills	DU		AIUB	
	Frequency	Percentage	Frequency	Percentage
Not at all skilled	4	10%	3	7.5%
Not very skilled	7	17.5%	5	12.5%
Fairly skilled	25	57.5%	20	50%
Very skilled	5	12.5%	8	20%
Expert	1	2.5%	4	10%
Total	40	100%	40	100%

In this question the students were asked to rate their Internet skill levels with a five point Likert scale measuring from 'not at all skilled' to 'expert'. From a total of 40 students of DU a maximum number of students i.e. 25 (57.5%) are seen to have rated themselves as 'fairly skilled' and only 1 (2.5%) is seen to have rated himself/herself as an expert. Whereas on the other hand, 4 (10%) students have rated themselves to be an 'expert' from a total of 40 students in AIUB, but the maximum number of students 20 (50%) have rated themselves to be 'fairly skilled'.

Graphical representation of the data: DU



Graphical representation of the data: AIUB



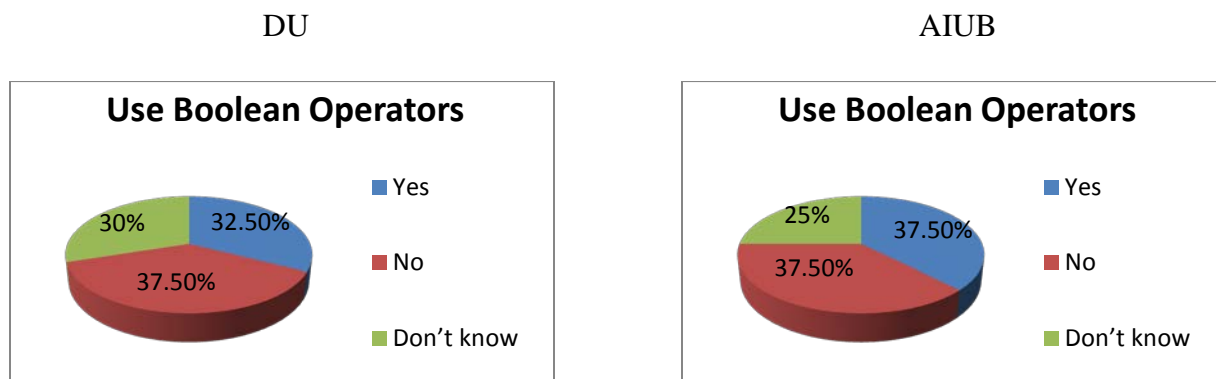
- vi) In order to find more documents on your topic you can use Boolean Operators (AND, OR, NOT). Do you use these operators?

Table 6

Use Boolean Operators	DU		AIUB	
	Frequency	Percentage	Frequency	Percentage
Yes	13	32.5%	15	37.5%
No	15	37.5%	15	37.5%
Don't know	12	30%	10	25%
Total	40	100%	40	100%

In this section of the questionnaire, the respondents were asked about Boolean operators (AND, OR, NOT), whether they used these operators to find more documents on a topic or not. The respondents were asked to choose among 'yes', 'no', or 'don't know'. From a total of 40 students, 12 (30%) and 10 (25%) from another 40 respondents from DU and AIUB respectively said that they are not aware of these operators. 15 (37.5%) from both DU and AIUB said No to these operators, i.e. they do not use them but are aware of them. On the other hand 13 (32.5%) and 15 (37.5%) responded in affirmative in both DU and AIUB respectively.

Graphical representation of the data:



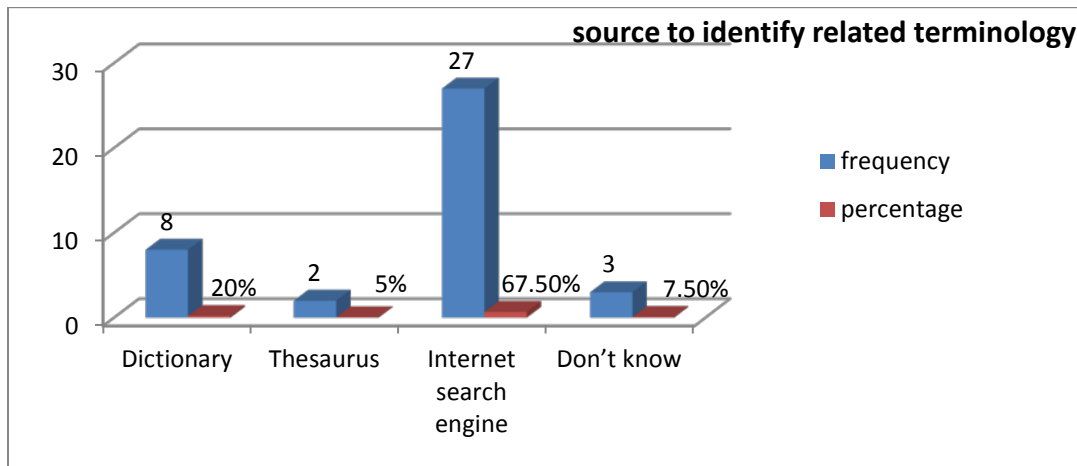
- vii) When searching a specialized database for documents on a subject, it is recommended to use the terminology specific to the database. To identify these terms you would consult:

Table 7

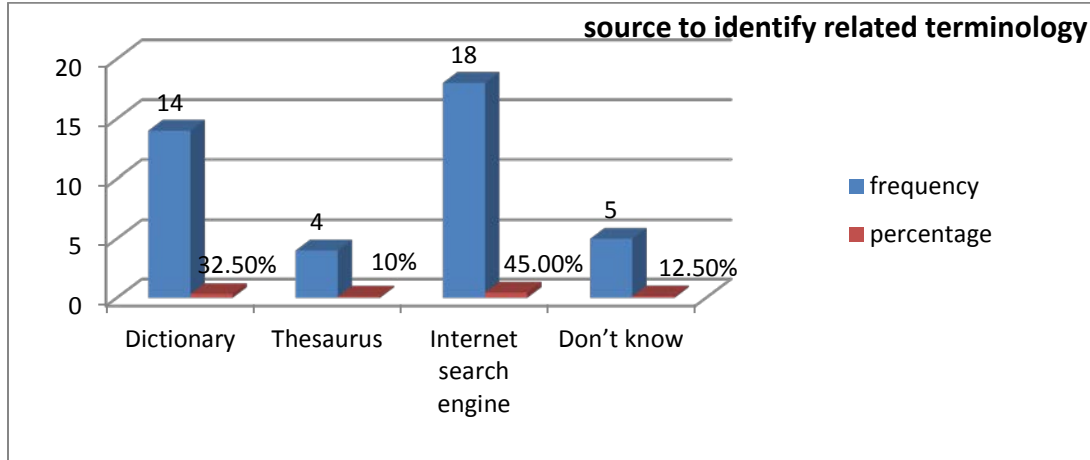
Sources	DU		AIUB	
	Frequency	Percentage	Frequency	Percentage
A dictionary	8	20%	13	32.5%
Thesaurus	2	5%	4	10%
An internet search engine	27	67.5%	18	45%
Don't know	3	7.5%	5	12.5%
Others	-	-	-	-
Total	40	100%	40	100%

Table 7 shows that only 5% of the respondents from DU and 10% of the respondents from AIUB had the right answer (b). Option (a), a dictionary, selected by 20% and 32.5% of the students from both DU and AIUB respectively, is not completely incorrect; however, as dictionaries are not associated with any specific search tools, they cannot indicate which terms to use in a given tool. Furthermore, dictionaries do not situate terms in their linguistic environment by providing generic, specific and related terms for each descriptor. Many catalogues and databases use controlled vocabulary to describe the documents they identify. Students may be less familiar with this concept since they often use Internet search engines that do not have thesauri. 7.5% and 12.5% from DU and AIUB respectively said that they don't know the answer.

Graphical representation of the data: DU



Graphical representation of the data: AIUB



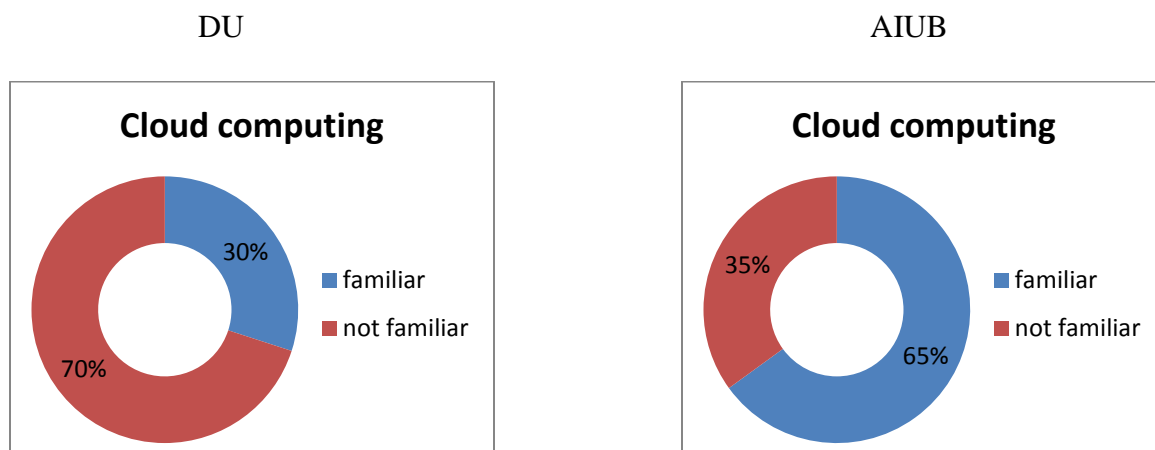
viii) Are you familiar with the term “cloud computing”?

Table 8

Cloud computing	DU		AIUB	
	Frequency	Percentage	Frequency	Percentage
Familiar	12	30%	26	65%
Not familiar	28	70%	14	35%
Total	40	100%	40	100%

Table 8 indicates the respondents' familiarity with the concept of 'cloud computing'. 30% and 65% of respondents from DU and AIUB respectively have said that they are familiar with the term 'cloud computing'. Whereas, 70% and 35% of respondents from both DU and AIUB respectively is seen to be not familiar with the concept of cloud computing.

Graphical Representation of the data:



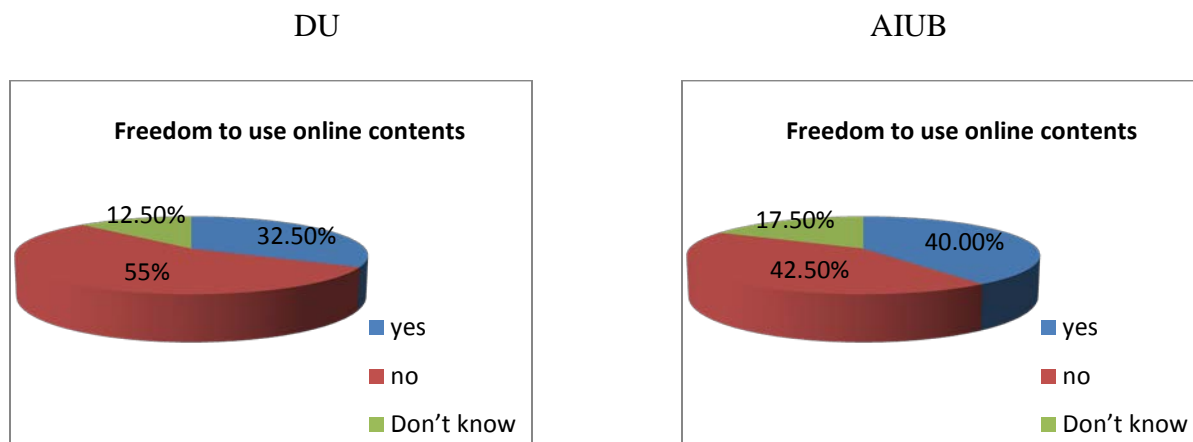
- ix) Do you think we should have the freedom to use all online contents without taking permission from the IPR/copyright holder?

Table 9

Freedom for use	DU		AIUB	
	Frequency	Percentage	Frequency	Percentage
Yes	13	32.5%	16	40%
No	22	55%	17	42.5%
Don't know	5	12.5%	7	17.5%
Total	40	100%	40	100%

Respondents were asked whether they should have the freedom to use online contents without the permission of the IPR/copyright holder or not. 55% and 42.5% of respondents from DU and AIUB respectively is seen to chosen the right option of 'no'. However, 32.5% and 40% of the respondents from DU and AIUB respectively is seen to have said 'yes', where 12.5% and 17.5% from DU and AIUB said they don't know.

Graphical representation of the data:



- x) How familiar are you with Internet related terms? Please tick an option between 1 to 5, where 1 represents “no understanding”, 2 represents “little understanding”, 3 represents “some understanding”, 4 represents “good understanding” and 5 represents a “full understanding” of the item.

Table 10(a)

Terms	DU				
	1	2	3	4	5
Modem	7.5%	10%	7.5%	27.5%	47.5%
Browser	2.5%	5%	5%	35%	52.5%
Server	10%	20%	32.5%	20%	17.5%
HTML	30%	17.5%	20%	17.5%	15%
Advanced Search	20%	12.5%	22.5%	15%	30%
PDF	7.5%	10%	7.5%	20%	55%
Spam	32.5%	22.5%	17.5%	12.5%	15%
Refresh/Reload	10%	5%	17.5%	20%	47.5%
Cookie	42.5%	15%	12.5%	12.5%	17.5%
'bcc' option in email	47.5%	7.5%	17.5%	22.5%	5%

Table 10(b)

Terms	AIUB				
	1	2	3	4	5
Modem	2.5%	7.5%	7.5%	30%	52.5%
Browser	2.5%	2.5%	7.5%	22.5%	65%
Server	2.5%	10%	20%	30%	37.5%
HTML	10%	15%	25%	22.5%	27.5%
Advanced Search	7.5%	2.5%	20%	22.5%	47.5%
PDF	0%	5%	15%	10%	70%
Spam	12.5%	22.5%	27.5%	7.5%	30%
Refresh/Reload	0%	2.5%	12.5%	17.5%	67.5%
Cookie	7.5%	17.5%	15%	27.5%	32.5%
'bcc' option in email	17.5%	25%	12.5%	20%	25%

The above table 10(a) and table 10(b) indicate the percentage of familiarity to these internet related items. In this question the students were asked to tick mark their level of understanding on a five point Likert's scale starting from 1 representing "no understanding" to 5 representing "good understanding". It is evident from table 10(a) that the students of DU have full understanding of the terms modem, browser, advanced search, PDF, and refresh/reload represented by 47.5%, 52.5%, 30%, 55%, and 47.5% respectively. On the other hand, the maximum number of students of AIUB has full understanding of all the terms listed in table 10(b). The familiarity of the terms modem, browser, advanced search, PDF, and refresh/reload are represented by 52.5%, 65%, 47.5%, 70%, and 67.5% respectively.

xi) How is your conceptual understanding of Digital Literacy (DL)?

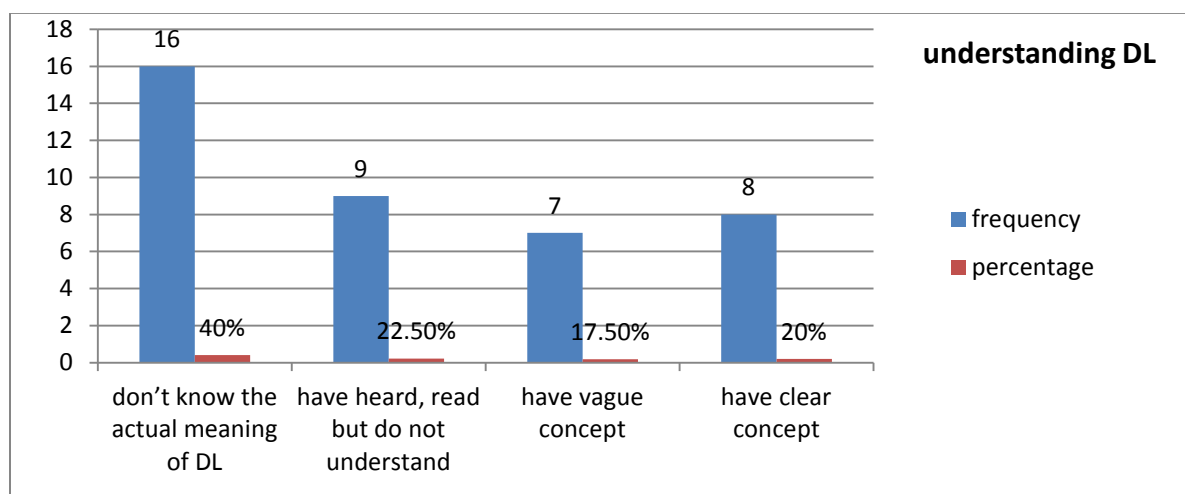
Table 11

Conceptual understanding	DU		AIUB	
	Frequency	Percentage	Frequency	Percentage
Don't know the actual meaning of DL	16	40%	9	22.5%
Have heard, read but do not understand	9	22.5%	18	45%
Have vague concept	7	17.5%	6	15%
Have clear concept	8	20%	7	17.5%
Total	40	100%	40	100%

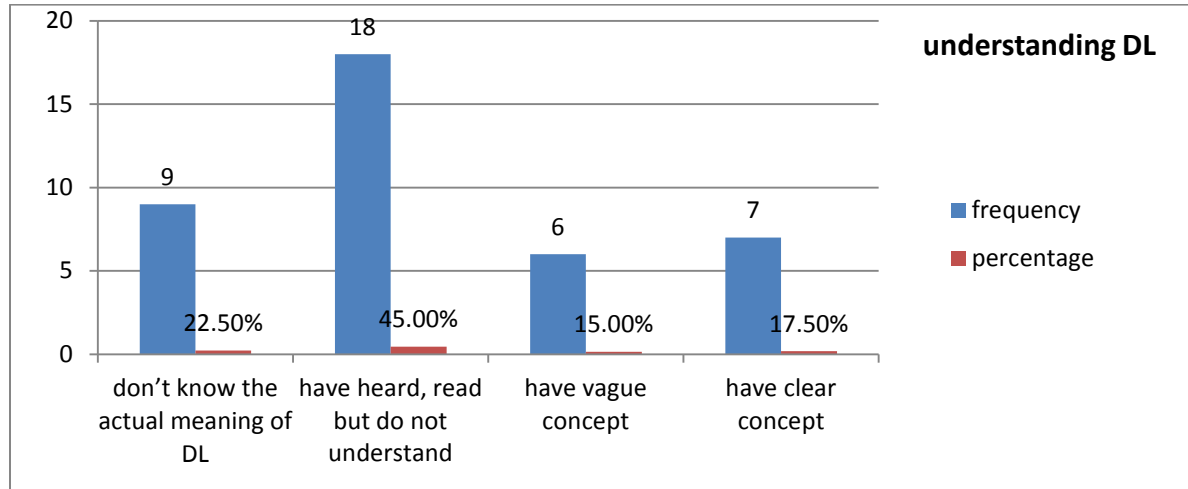
The question to the students was, do they have any concept about digital literacy? It was found that most of the students were familiar with the concept. It has come out from observations and

discussions that many of the students' heard the name but do not know the meaning. The responses brought some surprises and highlighted some of the assumptions that existed among the students. Table 10 compares the levels of understanding of the digital literacy concept among the students of DU and AIUB. At the onset, it is observed that 16 (40%) students from DU do not know the actual meaning of digital literacy, mean while 9 (22%) of respondents from AIUB is found that they also do not know the actual meaning of digital literacy. On the other hand only 8 (20%) of students from DU and 7 (17.5%) of students from AIUB have clear concept on digital literacy and it is followed by 9 (22.5%) and 18 (45%) from DU and AIUB respectively have heard, read but do not understand about digital literacy. It is also revealed that 17.5% and 15% of students from DU and AIUB respectively have vague concept which means they know about digital literacy but the concept is wrong. In conclusion it is showed that majority of the students i.e. 40% in DU do not have the concept of digital literacy as only 20% have the clear concept. Majority of the students i.e. 45% in AIUB have heard read but do not understand the meaning of digital literacy, whereas only 17.5% have the clear concept.

Graphical representation of the data: DU



Graphical representation of the data: AIUB



- xii) Do you think DL education and training courses should be included in Graduate Program?

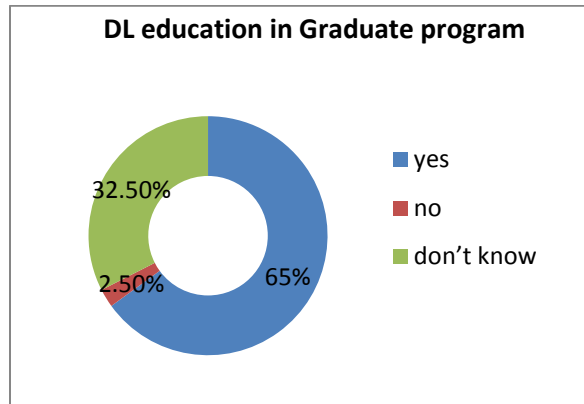
Table 12

DL program	DU		AIUB	
	Frequency	Percentage	Frequency	Percentage
Yes	26	65%	21	52.5%
No	1	2.5%	7	17.5%
Don't know	13	32.5%	12	30%
Total	40	100%	40	100%

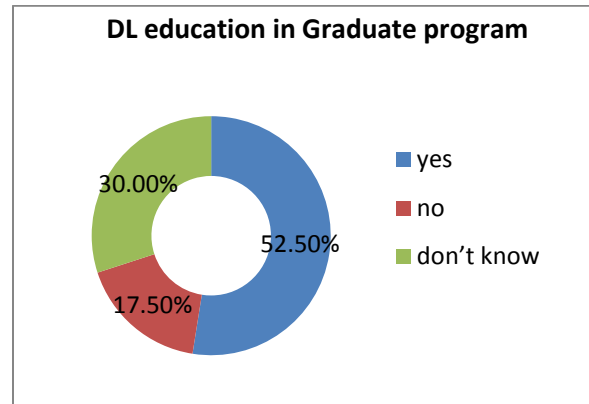
Table 12 indicates that, almost majority i.e. 65% of the respondents and 53.5% of the respondents from DU and AIUB respectively agreed that digital literacy education and training courses should be included in graduate programs, whereas 2.5% and 17.5% from DU and AIUB respectively did not find the necessity to include DL education in Graduate program, in the same

time, 32.5% and 30% of respondents from DU and AIUB did not know whether DL education should be included or not.

Graphical representation of the data: DU



Graphical representation of the data: AIUB



xiii) Do you think your Department has all the facilities to run the DL program?

Table 13

Facilities	DU		AIUB	
	Frequency	Percentage	Frequency	Percentage
Has all facilities	8	20%	11	27.5%
Some of the facilities are available	9	22.5%	7	17.5%
Need more facilities	12	30%	4	10%
Have severe shortage of all facilities	-	-	1	2.5%
Don't know	11	27.5%	17	42.5%
Total	40	100%	40	100%

In the above question the students were asked whether their respective departments have the facilities to run the Digital Literacy program. Only a few responded in affirmative to this. 20% of students from DU and 27.5% of respondents from AIUB said their departments have all the facilities to run a DL program. Whereas a majority of respondents i.e. 30% from DU said their departments need more facilities, and the majority of respondents 42.5% from AIUB said they don't know whether their departments have all the facilities to run the digital literacy program or not.

6.2 Discussion on the findings

The research aimed at examining graduate students' views about digital literacy in an effort to have a better understanding of how graduate students relate digital literacy to their academic work or research, and also to find out which sources of information graduate students prefer and additional sources they consulted for information for their academic work or research, and their ratings of levels of computer and internet skills reflects the overall condition of the students' digital literacy skills level.

For predicting university students' digital literacy skills the following nine measures were used:

- Gender: male student reported more familiarity with digital literacy skills than female students.
- Age: elder students reported more familiarity with digital literacy skills, although it might not be true out of an educational environment.
- Years using the computers: users with higher daily usage tend to report more familiarity with digital literacy skills.
- Digital literacy self-efficacy: respondents who evaluate their digital literacy skills as

“skilled” and “very skilled” in answering the digital literacy self-efficacy question are more familiar with digital literacy skills.

- Set of digital literacy measures: the set of digital literacy measures, introduced and tested in this study give us the ability to predict digital literacy skills of university students.

From the two sets of data AIUB and DU, the maximum numbers of participants were from the age group of 23-27 years 67.5% and 70% respectively. The maximum numbers of respondents were also found to be male in the cases, 52.5% from DU and 67.5% from AIUB.

In the first half of the questionnaire the respondents were asked about the estimate time span of using computers. It is evident from the afore stated data that the maximum number of respondents from DU has been using computers for 1-4 years, whereas, the maximum respondents from AIUB has been using computers for more than 8 years. Later in the process the students were asked to rate their computer skill level, from a range of ‘basic’ to ‘excellent’. It is seen that majority of the students from both AIUB and DU has rated themselves to be “good” at computer skills. Similarly majority of the respondents from both the universities have rated themselves “to be fairly skilled” in terms of Internet related skills. When the respondents were asked about their usage of Boolean operators in information retrieval, it came out that most of them are not aware of these operators and many do not use them, only a few from both the universities responded in affirmative, but the majority said they do not use these operators.

When this question was asked to them by providing them with a correct answer among the options, the students failed to identify the correct option. Students were asked, where to find the related terminology specific to a database, and the correct answer ‘thesaurus’ were only answered by 5% of respondents from DU and 10% of respondents from AIUB.

Respondents were asked about their familiarity to the concept of 'cloud computing', it is evident from the sets of data that the majority of the students (70%) from DU are not at all familiar to the term 'cloud computing', whereas the majority of respondents(65%) from AIUB responded that they are familiar with the concept of 'cloud computing'.

Students were also asked about IPR to ensure their skills for appropriate use of online contents; majority of the respondents from both DU and AIUB rightly said that they should not be provided with the freedom to use online contents without the permission of the copyright holder.

When the respondents were asked about their conceptual understanding of Digital literacy it was seen that majority of them from DU do not know the actual meaning of DL, but the majority respondents from AIUB said they have heard, read but do not understand the concept. When the students were asked whether DL should be included in Graduate programs or not, majority from both the universities responded in affirmative. Lastly the respondents were asked whether their respective departments have all the facilities to a run a DL program or not, majority from DU responded that the departments need more facilities, but majority of the respondents from AIUB said they do not know whether their departments own all the facilities or not.

From the above discussion of the analyzed data, it is apparent that, the students of both private and public universities show almost similar level of understanding of digital literacy concept, skills, and have almost a same level of computer skills, internet related skills, except for a few areas where the students of private university showed more competence and understanding than public university students. Then again this study is not the final indicator of the digital literacy skills of university students, because it was a small sample from large population. The results reflect a rough idea how the levels may vary from time to time and individual to individual.

CHAPTER VII

Recommendations and Conclusion

7.1 Recommendations

Johnson, Edmundson-Bird, & Keegan (2012) argue that assessment needs to be at the heart of any measure looking to embed DL skills, and suggest that the following features are important when considering embedding DL skills into a curriculum:

- Alignment of learning outcomes, core curricula and assessment task
- Clear guidance about what skills will be valued and their ranking
- Authentic task within discipline, and ideally external interest
- Strong requirement for critical reflection.

They argue that it is important to be clear on the DL skills that the institution wishes to instill among students. Skills, such as critical evaluation of tools such as search engines, copyrighting and wikis could easily be embedded into the curriculum, whilst other technologies, such as video presentation, for example, may require a more contextualized approach (Johnson et al., 2012).

Institutional support is also vital to successful incorporation of DL into the curriculum, as even if academics are active in their support, and embed DL skills in to their modules, these skills may not filter up to a programme level due to lack of academics' control or influence over departmental regulations and pedagogical structures.

Indeed McGuinness (2007, p.32) insists that embedding DL skills needs to have a top down approach, and a broader, institution-wide shift in culture to ensure that these programmes have successful collaborations between students, librarians and academics, leading to the long-term

sustainability and viability. This may include programmes such as providing DL training directly to academics, ensuring that academics understand the importance of IL and DL skills, which is a proven method of ensuring DL and IL skills are effectively transferred to their students (Smith & Mundt, 1997).

In regard to educational system's approach toward new media technologies, in many countries and in Bangladesh, funding and planning are more focused on equipping educational institutes with new devices rather than helping students develop a new approach toward new media technologies.

Access to technology is only a part of the solution necessary to ensure digital inclusion and empowerment. Increasing digital skills and competencies embedded in a strong traditional literacy base make up the rest of this equation. Twenty-first century digital literacy skills are basic to classroom performance, workforce readiness, and full participation in civic life. The imperative to close the digital skills gap demands funding and other direct support to sustain current efforts and step up digital literacy initiatives. Academic libraries should prioritize digital literacy as part of their missions. They should allocate funding for programming, staff development, and other costs associated with providing digital literacy programs to patrons.

To support a digitally literate society, we must have access to robust infrastructure, including the services and hardware required to bring broadband to the device. We must have a trained and dedicated cadre of information professionals to develop and provide digital literacy programming. **We must have resources, tools, and technologies that support the variety of stages of individuals seeking digital literacy training. We must have an accurate picture of the current state of digital literacy programs, and we must be poised to evaluate and refine**

these programs to be ready for future initiatives. Digital literacy has a much wider scope than skill acquisition. It should equip students and staff to maintain and grow their ability to use and choose from a wide range of digital media for the purposes of communication, collaboration and knowledge acquisition - all vital facets contributing to employability in the 21st century. Indeed there is ample evidence of the centrality of digital skills and practices to many, if not most, professions but that graduates are not adequately prepared to fulfill this aspect of their future careers (e.g. Researchers of Tomorrow).

Whilst there were pockets of excellence within the private and public universities, digital literacies were not sufficiently embedded within teaching or staff's own practice to be regarded as mainstream. Staffs were finding problems in doing so because of a systemic lack of support and supporting structures. Responsibilities were not defined and there were no institution level commitments to guarantee learners parity of experience and opportunity in relation to digital literacy. Without the supporting technological infrastructure, there would be only limited value in having digital literacy embedded into strategy and practice.

In the digital age, restraints on traditional collaborative inquiry learning, as embodied in technologies for communicating with others, collecting and sharing information, analyzing data and presenting results can easily be overcome. Collaborative inquiry-learning activities in a digital environment (especially the Web 2.0 environment) can increase student efficiency in inquiry learning as well as heighten motivation for collaborative inquiry learning and DL.

In the light of the experiences gained from this study, the following recommendations are made for increasing DL competency of the students of University of Dhaka and AIUB. This study has given a detailed account of DL and provides a good understanding of what needs to be done at present in this regard. Despite of the obvious challenges faced by the University students such as

lack of personal computers, low internet access etc; there are also important opportunities for improving on what we can do now. There can also be no doubt that if the authority of both the private and public universities slowly but surely takes the immediate steps, they will be able to create self-sufficient and digital literate students who can make meaning full contributions to the society.

The following recommendations can be made to improve DL activities in both the universities:

- **Building awareness program:** A massive awareness raising campaign should be initiated in the departments of DU and AIUB about DL and its significance. More work to do and more steps need to be taken immediately to spread the concept among the students. The university authority can arrange various promotional activities like workshops, seminars and group discussions for adopting the concept themselves.

- **Library personnel:** Existing library personnel and more library staff need to become involved in training courses, so that ultimately more students can be trained.

- **Policy formulation:** A clear-cut DL program plan needs to be put in place so that all stakeholders are aware of the importance of DL. First and foremost, the development of DL policies whether for state or institution should come about with some form of government involvement? The university authorities can include DL courses in their curriculum.

- **Collaboration:** Librarians (seminar, university and others) involved in training must collaborate with the faculty and students on regular basis. There should be increased collaboration and cooperation among government agencies, academic institutions and corporate organizations to

bring together their intellectual and entrepreneurial expertise and experience. It needs to ensure that DL is ultimately integrated into the curricula of all academic programs. This is the only way to achieve the objective of creating as many digital literate individuals as possible.

- **Information retrieval techniques:** As many students do not know the using of Boolean operator, naturally they will not be able to make query using adjacency operator, truncation and others. Authority needs to arrange more training for adaptation with printed information retrieval tools and electronic Information Retrieval tools.

- **Internet facilities:** Universities, especially public universities should immediately allocated internet facilities for the students. The availability of online training material across all subject areas and disciplines should be ensured as soon as possible. However, it needs to give more emphasis on ICT literacy as it is the demand of current digital and knowledge-based society.

- **Building a committee:** A National Committee on DL should be formed which will be responsible for designing, coordinating and evaluating this nation-wide program. The committee will have representatives from teachers, librarians and information professionals, educationists, civil society members and education administrators. The ministries of Education, Information and Cultural Affairs would be engaged in the implementation of the program.

- **Monitoring progress:** Students should be given assignments to check whether they are achieving and developing DL skills. They should be instructed and guided to attain DL skills in a logical manner and master these skills to complement their academic progress.

- **Extensive training on ICT literacy:** ICT training modules should be integrated with the DL programs so that students can effectively utilize computing and telecommunications techniques for better fulfilling their information needs.

- **Training program:** Intensive and extensive training program should be organized for students, teachers and information professionals; they should be introduced to modern techniques and technologies of information production, processing and distribution, so that they can become proper guides for the students in acquiring DL skills.

DL has gained importance as we become more immersed in the information age. Whenever it comes from, the internet, the library or any other source, the most important thing is the ability to understand and evaluate information from various digital media. This study showed that DL concept is almost absent in the universities and students are facing considerable challenges in the area of DL and skills. Some recommendation was proposed for the incorporation of DL and skills into the curriculum. It is however, not the sole responsibility of the tertiary institutions to foster this area of knowledge and expertise. 'Charity begins at home' so the concept of DL should also be implemented from the root level, i.e. from the primary level of education.

7.2 Conclusion

The findings of this study may apply only to students at university levels, and so further research is needed to explore the possibilities of transferring them to DL education of other types and phases. Moreover, since DL is a broad concept that is constantly evolving, its fostering is a long and continuous process, consisting of developing not only knowledge and skills, but also appropriate awareness and higher level thinking skills. Therefore, incorporating DL into the education process of very disciplines and courses is a reasonable direction for DL development.

Although the question of how best to effectively integrate DL education into the curriculum may need further research, educators should always keep the key purpose of DL in mind: DL is not just for grasping certain knowledge and skills, but also for helping students develop their ability to survive and develop in this digital society. Most importantly, DL develops students' abilities to employ these digital technologies for generating constructive social practices. Finally the measures introduced and tested in this study are developed in an educational environment. It is believed that for other environments, age groups or for specific professional purposes we have to modify these skills. Needless to say as time goes by and in a rapidly changing technology environment we have to consider new changes in future studies.

REFERENCES

Bawden, D. (2001) "Information and digital literacies; a review of concepts." *Journal of Documentation*. Department of Information Science. City University London.

Eshet, Y. (2004). "Digital Literacy: A new terminology framework and its application to the design of meaningful technology-based learning environment." *Journal of Educational Multimedia and Hypermedia*.

Prensky, M. (2001). "Digital natives, digital immigrants." *On the Horizon*.

Ulicsak, M. (2004). *Digital literacy and the I-curriculum project*.

21st Century Skills: Literacy in the Digital Age. (2003) enGauge, North Central Regional Educational Laboratory. Learning Point Associates

Sieberhagen, A., & Cloete, L. (2012). The Evaluation of a Digital Information Literacy Program. *South African Journal of Libraries and Information Science*, 80(2).

Gourlay, L., Hamilton, M., & Lea, M. R. (2014). Textual practices in the new media digital landscape: messing with digital literacies. *Research in Learning Technology*.

Martin, A., & Grudziecki, J. (2006). DigEuLit: concepts and tools for digital literacy development. *Innovation in Teaching and Learning in Information and Computer Sciences*, 5(4)

De Haan, J., & Sonck, N. (2012). Digital Skills in Perspective: A Critical Reflection on Research and Policy. 3(6)

Eyal, L. (2012). Digital Assessment Literacy—the Core Role of the Teacher in a Digital Environment. *Educational Technology & Society*, 15 (2), 37–49.

Hargittai, E. (2005). Survey measures of web-oriented digital literacy. *Social Science Computer Review*, 23(3), 371-379.

Alkali, Y. E., & Amichai-Hamburger, Y. (2004). Experiments in digital literacy. *CyberPsychology & Behavior*, 7(4), 421-429.

Sieberhagen, E. A. (2011). The evaluation of a digital information literacy program (Doctoral dissertation).

Rowell, J., & Walsh, M. (2011). Rethinking literacy education in new times: multimodality, multiliteracies, & new literacies. *Brock Education Journal*, 21(1).

Goodfellow, R. (2014). Scholarly, digital, open: an impossible triangle?. *Research in Learning Technology*, 21.

Syamalamba, R. (2011). Information literacy programmes for undergraduate students. www.ijodls.com. In vol. 1, july-sept. 2011, issue, 49.

Williams, P. (2006). Exploring the challenges of developing digital literacy in the context of special educational needs communities. *Innovation in Teaching and Learning in Information and Computer Sciences*, 5(1), 1-16.

Karnad, A. (2013). Embedding digital and information literacy into undergraduate teaching.

Lopez-Fernandez, O., & Rodriguez-Illera, J. L. (2009). Investigating university students' adaptation to a digital learner course portfolio. *Computers & Education*, 52(3), 608-616.

Carlacio, J. L., & Heidig, L. (2009). Teaching digital literacy digitally: A collaborative approach. In *International Conference, April* (Vol. 24, p. 26).

Jun, F., & Pow, J. (2011). Fostering digital literacy through web-based collaborative inquiry learning—A case study. *Journal of Information Technology Education*, 10, 57-71.

Hamid Abdollahyan, Mohammad Ahmadi, A Survey Analysis of Digital Literacy among undergraduate Students of the University of Tehran, *Amity Journal of Media and Communication*, 2011, Vol. 1, Issue 1, published by Amity University of Rajasthan, Jaipur, India.

Lankshear, C., & Knobel, M. (Eds.). (2008). *Digital literacies: Concepts, policies and practices* (Vol. 30). Peter Lang.

Simonics, I. (2010). Problems in digital literacy. In *Proceedings of Joint International IGIP-SEFI Annual Conference* (pp. 146-149).

Rheingold, H. (2012). Stewards of Digital Literacy. *Knowledge Quest*, 41(1), 52-55.

Bawden, D. (2008). Origins and concepts of digital literacy. *Digital literacies: Concepts, policies and practices*, 17-32.

Caldwell, H., & Honeyford, G. (2014). Computing and digital literacy. *Subject teaching in primary education*, 43.

Lesseig, A. M. (2012). *Digital literacy teaching strategies* (Doctoral dissertation, Sierra Nevada College).

Jones, B., & Flannigan, S. L. (2006). Connecting the digital dots: Literacy of the 21st century. *Educause Quarterly*, 29(2), 8-10.

Eshet-Alkalai, Y., & Chajut, E. (2009). Changes over time in digital literacy. *CyberPsychology & Behavior*, 12(6), 713-715.

Lankshear, C., & Knobel, M. (2006). Digital literacy and digital literacies. *Nordic Journal of digital literacy*, 1(1), 12-24.

Buckingham, D. (2009). *The future of media literacy in the digital age: some challenges for policy and practice*.

Koltay, T. (2011). The media and the literacies: media literacy, information literacy, digital literacy. *Media, Culture & Society*, 33(2), 211-221.

Rivoltella, P. C. (2008). *Digital Literacy: Tools and Methodologies for Information Society*. IRM Press. Available from: IGI Global. 701 East Chocolate Avenue Suite 200, Hershey, PA 17033.

Gui, M., & Argentin, G. (2011). Digital skills of internet natives: Different forms of digital literacy in a random sample of northern Italian high school students. *New Media & Society*, 13(6), 963-980.

Ng, W. (2012). Can we teach digital natives digital literacy?. *Computers & Education*, 59(3), 1065-1078.

<http://www.telenor.com/sustainability/initiatives-worldwide/grameenphone-microsoft-digital-literacy-programme/>

<http://www.biid.org.bd/index.php?detail=activities>

http://www.digitalaccess.org/pdf/White_Paper.pdf

Research Questionnaire

Dear Respondent,

I would like to inform you that, in connection with my requirement for M.A. thesis, I am conducting a research in the title of “**Digital Literacy Skills of University Students of Bangladesh: A comparative study between a public and a private University**”. The main objectives of the study are to trace out the present scenario of Digital Literacy skills within the public and private University students.

I assure you the data being collected will be kept strictly confidential and used for my research work only. Please spare your valuable time and fill up the questionnaire.

Thanking You.

Tamanna Hossain

M.A. 2nd Semester (Thesis)

Department of Information Science and Library Management

University of Dhaka

Please tick (✓) mark the appropriate option.

1. Demographic and Academic information
 - 1.1. Department:
 - 1.2. Institution/ University:
 - 1.3. Age Group:
 - 18-22
 - 23-27
 - 28-32
 - 32-37
 - 1.4. Academic Year:
 - 1st Year
 - 2nd Year
 - 3rd Year
 - 4th Year
 - M.A.
 - 1.5. Gender:
 - Male
 - Female
2. How often do you use a computer?
 - Everyday
 - Few times a week
 - Occasionally
 - Never
3. How long have you been using computers for?
 - Less than 1 year
 - 1-4 years
 - 5-7 years
 - 8+ years
4. What do you usually use a computer for?
 - Work
 - Assignment
 - Personal Use
 - Entertainment
 - Business
 - Others, please specify _____
5. Have you had any computer training?
 - Yes
 - No

6. How would you rate your computer skill level?
 - Basic
 - Moderate
 - Good
 - Excellent
7. How often do you refer to online materials for academic purposes?
 - Frequently
 - Everyday
 - Once a week
 - Never
8. In terms of your internet skills, you consider yourself to be:
 - Not at all skilled
 - Not very skilled
 - Fairly skilled
 - Very skilled
 - Expert
9. How do you look for information online?
 - Using search engines
 - Browsing Websites
 - Using Subject Portals
 - Take help who knows
10. In order to find more document on your topic you can use Boolean Operators (AND, OR, NOT). Do you use these operators?
 - Yes
 - No
 - Don't know
11. When searching a specialized database for documents on a subject, it is recommended to use the terminology specific to the database. To identify these terms you would consult:
 - A dictionary
 - A thesaurus
 - An Internet search engine
 - Others please specify _____
 - Don't know
12. How familiar are you with the internet related items?

Please tick an option between 1 to 5, where 1 represents “no understanding”, 2 represents “little understanding”, 3 represents “some understanding”, 4 represents “good understanding” and 5 represents a “full understanding” of the item.

Terms	1	2	3	4	5
Modem					
Browser					
Server					
HTML					
'bcc' option in e-mail					
Spam					
Meta-search engine					
Cookie					
Remote login					
Refresh/Reload					
Advanced Search					
ISP					
PDF					
Preference settings					
Meta tag					
Natural Language					
News Group					
Flaming					
Spider					

13. Do you have an account in any of the following social networking sites?

You can choose more than one option.

- Academia.edu
- Facebook
- Google+
- Twitter
- Instagram
- Flickr
- LinkedIn
- Others, please specify _____

14. Are you familiar with the term 'cloud computing'?

- Yes
- No

15. If yes, please specify the reason(s) why you would consider cloud computing in your daily activities.

You can choose more than one option.

- Social Impact
- Education
- Development of business IT infrastructure
- Information Security
- Flexibility and Scalability of IT resources

- Back up Services
 - Others, please specify_____
16. Which online learning system do you prefer?
- Moodle
 - Atutor
 - eFront
 - DoceboLMS
 - ILIAS
 - OLAT
 - Don't know
17. What Web 2.0 tools you use most frequently?
You can choose more than one option.
- Wikis
 - Blogs
 - Tags
 - Podcast
 - Collaboration and communication
 - Conversion
 - Multimedia image editors
 - Presentation Tools
 - RSS aggregators
 - Personalized search engines
 - Social bookmarking
 - Online storage
 - Others_____
18. Do you think we should have the freedom to use all online contents without taking permission from the IPR/copyright holder?
- Yes
 - No
 - Don't know
19. In your view, is the issue of IPR very important?
- Very important
 - Important
 - Moderately important
 - Not important
 - Don't know
20. Do you have any concept about Digital Literacy (DL)?
- Do not know the actual meaning of DL
 - Have heard, read but do not understand

- Have vague concept
 - Have clear concept
21. Do you think DL education and training courses should be included in Graduate Program?
- Yes
 - No
 - Don't know
22. Do you think your department have all the facilities to run the DL program?
- Have all facilities
 - Some of the facilities are available
 - Need more facilities
 - Have severe shortage of all facilities
 - Do not know

Thank you for your time.