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**Ghanaian Library and Information Science Professionals’
Conceptions of Digital Libraries:
A phenomenographic study**

Master Thesis

Supervisor: Sirje Virkus

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Declaration

I certify that all materials in this dissertation which is not my own work has been identified and that no material is included for which a degree has previously been conferred upon me.

..... (Signature of candidate)

Dedication

This thesis is dedicated to my wife Mrs Diana Akosua Boamah and our daughter Erica Akosua Fosua Boamah

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The joy of every young woman is to share life with her husband. The decision to go through this master programme has denied you my presence for two years. But you were undeterred. You went through thick and thin in my absence. You kept strong and determined and in fact, urged me on. You told me the end will be good. Now the end has come and it is good. For your sacrifice, I express my heartfelt gratitude to you Mrs. Diana Boamah, my dear wife. I will soon be home.

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Abstract

Digital libraries (DLs) have received much attention from many institutions and countries in recent times. Discussions on the concept are concentrated in the advanced world. Contribution to the discussion on DLs from developing countries is very insignificant. The concept of DLs has been given different definitions. This is because professionals perceive it differently from their various professional viewpoints. Inadequate technological advancement is a problem in developing countries including Ghana. This has caused slow progress in all aspects of education including LIS education in Ghana. DLs thrive on computer technologies. With the level of computer technology in Ghana, the country's libraries are yet to develop DLs. The purpose of this research is to identify Ghanaian LIS professionals' conception of DLs and how knowledge of DL has impacted on LIS education in Ghana.

This study serves as my master thesis which required to be completed within five months. Various high level librarians and lecturers from the main library school in Ghana were interviewed using the phenomenographic research approach to discover variations in perceptions leading towards identification of qualitatively different conceptions of DLs. Conceptions were then reassessed in comparison with previous research and current framework and standards generated by professionals. Results were basically reviewed in line with a study conducted by LIS experts who wrote about digital libraries in the literature.

The findings identify 7 categories of Ghanaian information professionals' conceptions of the digital library and show them to be both similar to, and in some part different from conceptions described or exhibited in previous research by their counterpart professionals in the developed world.

The research focuses on showing how 10 information professionals sampled from professionals in Ghana perceived DLs. The research implies that as a new concept that thrives on Information and Communication Technologies (ICTs), knowledge about DLs is very useful for its full development and operations. It is even more important to find out peoples knowledge about the concept in areas where there is inadequate and unavailable ICT as well as other socio-economic situations which pose real challenges.

Lecturers at the library school and librarians need to constantly upgrade their ICT skills so as to be in a better position to teach students about DLs and help users with their information retrieval needs and the use of DLs respectively. Information Technology (IT) and DL literacy should be incorporated in the educational system right from early school ages. This will inculcate into the child knowledge about (digital) libraries and their use. It will also build an interest and love for the field right from infancy so that when they eventually take up relevant positions, they will support the field with necessary resources. Government should channel adequate resources to support the LIS field so as to alleviate some of the problems in the area. The library association in Ghana should be vibrant in its activities so as to serve as a useful mouth piece for channelling the grievances of the profession.

The research project contributes knowledge to the LIS field in Ghana. It initiates discussions on the need for a unified understanding of the DL phenomenon in Ghana. It is believed that a common basic understanding can help solve some of the challenges and make the development of DLs in Ghana possible. Once academic libraries manage to establish their digital collections, it will not be difficult to have a national digital collection and then to think of digitally preserving the rich cultural heritage of Ghana for lasting preservation.

Keywords; Digital libraries, Library and Information Science professionals, Conception, Library education.

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Abbreviations

ABLA	Associate of the (British) Library Association
AHRB	Arts and Humanities Research Board
AVU	African Virtual University
CARP	Center for Advance Research in Phenomenography
CIC	Community Information Centers
CNRI	Corporation for National Research Initiatives
CARL	Consortium of Academic and Research Libraries
CSIR	Centre for Scientific and Industrial Research
CULD	Committee of University Librarians and their Deputies
CVCP	Committee of Vice – Chancelors and Principals
DANIDA	Danish International Development Agency
DELOS	Network of Excellence on Digital Libraries
DILL	Digital Library Learning
DIS	Department of Information Studies
DL	Digital Libraries
DLAS	Department of Library and Archival Studies
DLS	Department of Library Studies
EARLI – SIG	European Association for Research on Learning and Instruction – Special Interest Group
EIL	Electronic Information for Libraries
EWB	Engineers without Border
GILLDDNET	Ghana Interlibrary Lending and Document Delivery Network
GLA	Ghana Library Association
GLB	Ghana Library Board

GSLI	Ghana School Library Initiative
ICT	Information Communication Technologies
ICT4AD	Information Communication Technology for Accelerated Development
IFLA	International Federation of Library Associations and Institutions
IFLANET	International Fedration of Library Association and Institutions Web site
INFODEV	Information for Development
IT	Information Technology
INSTI	Institute for Scientific and Technological Information
INASP	International Network for the Availability of Scientific Publications
KNUST	Kwame Nkrumah University of Science and Technology
LIS	Library and Information Science
MINERVA	EC Ministerial Network for Valorising Activities in Digitization – European Commission
NGO	Non- Governmental Organizations
OALDCE	Oxford Advanced Learners’ Dictionary of Current English
OCLF	Osu Children’s Library Fund
OPAC	Oline Public Access Catalogue
PERI	Programme for the Enhancement of Research Information
REN	Research and Education Network
UCC	University of Cape Coast
UCEWK	University College of Education, Winneba, Kumasi Campus
UG	University of Ghana
UNDP	United Nations Development Programme
UNESCO	United Nations Education Science and Cultural Organization
USA	United States of America
VOLTACOM	Volta River Authority Communication Network
WAN	Wide Area Network
WDL	World Digital Library
WWW	World Wide Web

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Chapter One: Introduction

This chapter provides background information for this study and presents the aims, objectives and the research questions of this research. The justification for the research and the methodology used in the study are then discussed, followed by definitions and limitations of the research. The chapter concludes with a brief summary of the ensuing chapters providing an overall structure of the thesis.

1.1. Background to the Study

It is clear today that Digital Libraries (DL) are well established in many institutions of higher education and by various countries (Passos, Santos & Ribeiro, 2008). Digital libraries are new, and investment in them is fraught with unknowns. Consequently, librarians and library directors are looking for information about different institutional experiences, including what digital library investments are considered good, meaningful and cost-effective, and what influences have helped shape successful digital library programs and projects.

In an attempt to facilitate the fast flow of information and the sharing of knowledge, institutions, countries and corporate bodies are developing their own digital libraries according to their understanding of what the concept is about (Collier, 2006). Examples include; The Europeana, <http://www.europeana.eu/portal/>, American memory, <http://memory.loc.gov>, the New Zealand digital library, <http://nzdl.sadl.uleth.ca/cgi-bin/library.cgi> just to mention a few.

Many countries also have online digital collections of their national libraries, especially in the developed world. Examples include; the National Library of Estonia, http://www.nlib.ee/?set_lang_id=2, the National Library of Norway, <http://www.norway.org/ibsen/institutions/library/library.htm>, the National Central Library of Italy in Rome, <http://www.bnrcrm.librari.beniculturali.it/>, just to mention a few.

Many developing countries in their desire to catch up with their developed counterparts, have related digital library projects with the hope of having an ideal digital library in the future (Mutula, 2004). Ghana is also making efforts to find a place in the digital world (Martey, 2004).

Library and Information Science (LIS) education in Africa started in 1944 in Ghana (Boye, 1996; Gupta, 1993; Mammo, 2007). As a developing country, Ghana is saddled with some technological and other problems that have prevented her from extending the glory to establishing additional library schools, let alone developing a digital library (Alemna, 1994).

Ghana has neither a digital library nor a national library. Public library services in Ghana are provided by the Padmore Library on African Affairs, also known as the Ghana Library Board (GLB). There is no legislature that mandates the GLB to provide public library services on behalf of a national library. The GLB has just taken it upon itself to provide those services in the absence of a national library (A. A. Alemna, personal communication, April 24, 2009).

The Internet as an information resource has become a very important source of current information (Adika, 2003). The Internet offers an array of capabilities for communicating and retrieving information. The WorldWideWeb (WWW), which offers access to multimedia data has enhanced this activity even further through facilities such as search engines, meta-search engines and information gateways. This facility on the Internet enables people to access information from different geographical locations at anytime. Many people, especially those from developing countries like Ghana, confuse the WWW with DLs because of its information retrieval power, (albeit there has been no scientific research to show that WWW and DLs are taken as synonymous in Ghana).

Although digital libraries have a long way to go before they reach their full potential, there has been significant development in the past decade. Nonetheless, referring to the digital library generically masks the fact that digital libraries exist in diverse forms and with quite different functions, priorities and aims (Greenstien and Thorin, 2002). This suggests that there is yet to be a complete digital library that can serve all the needs of its users. However, there are many digital collections which, with comprehensive metadata harvesting standards, can be merged to make a bigger digital collection to serve the needs of a wide range of users. As a result of the varied nature of DLs across the world, it becomes important to find out how people perceive the phenomenon in the digitally divided world. This can help to facilitate the development of the dream of “world digital library“ which is hoped to serve the information needs of every user, irrespective of his or her geographical, religious, cultural, gender, age or language background.

The researcher is a student of an international master programme in Digital Library Learning (DILL). His two year experience in the programme brought him into contact with fellow students from over 16 different countries across the world and over 20 lecturers (both local and visiting) who are experts in the LIS field from Europe, America, Australia and Asia. Discussions on DLs with both students and lecturers throughout these two years of study suggested to the researcher that there are varied understandings of the concept as well as implementations of digital libraries. It is believed that the different understandings are also

influenced by a person's background (professional, cultural or beliefs). Coming from a developing country (Ghana), the researcher was interested in studying how LIS professionals from Ghana perceived the DL.

1.2 Statement of the Problem

There is a greater concentration of discussions on DLs in the developed world than in developing countries. The concept of digital libraries has been given different meanings and definitions by different professionals even in the areas of high concentration of discussions on the concept. Some scholars even doubt the veracity of the concept. For instance, David Weinberger argues convincingly that online libraries are not libraries at all (Weinberger, 2008 pp. 18).

DL thrives on computer technologies and systems. Developing countries like Ghana are still struggling with these technologies. The majority of the people do not have access to computers and the Internet. Libraries and other related institutions are saddled with technological problems (Alemna, 1999). Knowledge of computer technologies and their usage is low in Ghana comparing to the developed world (Martey, 2004). There is very low bandwidth for Internet connectivity. High bandwidth is extremely expensive and few organizations in Ghana can afford it. There is also unstable electricity supply. The cost of running generator plants to supplement power supply, for the few who can afford, is also high (A. A. Alemna, personal conversation, April 23, 2009; H. Asomah-Hassan, personal communication, April 1, 2009).

In November, 2008, the first batch of the International Master in Digital Library Learning programme (DILL 1) had a workshop at the University of Parma, Italy, where each of the 20 students [the actual number of students in DILL1 was 18, but 2 other Erasmus students from Estonia and Germany joined the group at Parma University making the number 20] were asked to do a short presentation on their countries and the state of their national libraries. It was observed at the workshop that most of the developing countries did not have a DL and even worse, a national library at all in Ghana. Students from Africa and other developing countries on the programme presented projects other than DLs in their countries.

This calls for the need to acknowledge the phenomenon of DL as well as strengthen the education on DLs in developing countries, with particular reference to Ghana. It is hoped that creating awareness of DLs in developing countries can motivate governments and institutions

as well as library associations to redirect resources to developing their own DLs. So that, in spite of their technological and other challenges, developing countries can take long strides in the development of DLs. This also can help bridge the wide gap between the developed and developing worlds in terms of Information technology (IT) and DL development and use.

It is hoped that the results of this study can contribute to the better understanding of DLs among library and information science professionals in Ghana. The study also suggests ways that the LIS curriculum in the library school can be adjusted if necessary. This can help to bring the best out of future LIS professionals and to equip them to fully match up with requirements in the new age of digital libraries.

1.2.1 Research Questions

The central questions to this study are:

- What are Ghanaian LIS professionals' conceptions of DLs?
- How has knowledge about DLs impacted on LIS education in Ghana?
- What challenges face LIS education in Ghana?

1.2.2 Aims and Objectives

The main aim of the study was to find out how library and information professionals in Ghana understand or perceive digital libraries.

The objectives of the study are:

- To identify Ghanaian LIS professionals' conceptions of DL
- To identify some of the challenges that affect digital library education in Ghana.
- To suggest ways in which LIS education can be improved in Ghana.

1.3 Justification for the Research

A good research-undertaking starts with the selection of the topic, problem or area of interest, as well as the paradigm (Creswell, 1994; Mason, 1996). A paradigm is the patterning of thinking of a person (Stanage, 1987). Differently stated, a paradigm is an action of submitting to a view (Stanage, 1987). According to Denzin and Lincoln (2000, p. 157), a paradigm is a "basic set of beliefs that guide action", dealing with first principles, 'ultimates' or the researcher's world views (as cited in Groenewald, 2004).

This research falls within the framework of the interpretivist paradigm. Interpretive research is fundamentally concerned with meaning and it seeks to understand social members' definition of a situation (Schwandt, 1994, p. 118, as cited in Gephart, 1999). It is concerned with subjective meanings - how members of society apprehend, understand or make sense of social events and settings and how this sense-making produces features of the very settings to which sense-making is responsive (Gephart, 1999). In this respect, the researcher seeks to find out how the community of LIS professionals in Ghana perceive or understand the DL phenomenon. It also tries to find out if this understanding has influenced LIS education, considering all the challenges to LIS education in Ghana.

Constructionism is the epistemology supporting this study. The constructionist has been concerned with the interplay of subjectivity, objective and intersubjective knowledge. Intersubjectivity is the process of knowing others' minds. It occurs through language, social interaction and written texts (Gephart, 1999). This is in line with the intent of this study which attempts to know the minds of LIS professionals in Ghana. My epistemological position regarding this study can therefore be formulated as follows; a) data is contained within the perspective of LIS professionals in Ghana, who have special knowledge about LIS developments in Ghana; and b) due to this, the researcher engages with participants through interviews in collecting the data.

1.3.1 Motivation and Previous Studies

Several empirical studies relating to LIS education in Ghana, have been conducted by various authors in the field. For instance, Boye (1991,1996), presents an interesting insight into the history and development of library education in Ghana, and also discusses the challenges that come with the new decade in education for library and for information science professionals in Ghana. Alemna, (1990, 1994), discusses recent changes in, and the future of LIS education as well as education for LIS professionals in Ghana. Taylor (1979), also writes about the future of professional education and the information environment.

Other authors have placed emphasis on the use of computers and other related technologies in the LIS profession and its education. "Internet use among university faculty and libraries in Ghana" has been well discussed by Adika, (2003). Information and Communion Technology (ICT) use in education is dicussed by Martey (2004). However, he dicussed ICT as it is used in distance education in all fields of study and not only in LIS. This researcher was actually motivated to conduct research into the current topic, after reading Martey's paper. In his

summary and conclusions, Martey made some recommendations for “*DL students*” and how they could use the Internet to look for information [*DL* as used in Martey (2004), refers to *Distance Learners*]. Martey’s paper created an impression for the current researcher of the fact that digital libraries can also be used in distance learning and might be associated with the use of the Internet to look for information. Hence, the interest to find out Ghanaian LIS professionals’ perceptions of DLs, was influenced by Martey.

The study also drew motivation from Tammaro (2008). Tammaro used the case study approach to obtain from users, their perceptions of digital library services and to give them an opportunity to make suggestions. She also used her study to establish and test a collaborative methodology with which to evaluate best practice for digital libraries. She found out that users have different perceptions with regards to digital libraries and that they tend to use the services of more than one cultural institution. It was identified in Tammaro’s (2008) study that there is a positive attitude towards digital, but users often do not know how to use the libraries and are unaware of all of the services offered (Tammaro, 2008).

Tammaro’s (2008) study and other’s such as Liew’s (2008) study on digital library research from 1997-2007 about organizational and people issues, gave the confidence that it can be possible to successfully conduct this research using the phenomenographic approach. Even though Liew (2008) did not use phenomenography, her study gave a lot of impetus for this study. Liew’s (2008) study was a literature review covering articles published in mainstream peer-reviewed library and information science/study journals. Liew analyzed 577 articles published in both academic and professional LIS journals with the aim of providing a snapshot of digital library research from 1997 to 2007 that focused on organizational and people issues, including those concerning the social/cultural, legal, ethical, and use dimension. Liew found out that topics on DL use and usability dominated as compared to economic, social and legal issues (Liew, 2008).

There is very little mention of digital libraries in the literature on Ghana. Where mention is made, it is associated with ICT use; for example as in Martey, (2004). Other articles that discuss DLs are either about Africa in general or the rest of the world; for example as in Liu (2004) and Mutula (2004). This reveals that there is limited literature about DLs on Ghana. This study seeks not to repeat what has already been said by previous authors. What is proposed here is a discussion of library professionals’ perceptions of what a DL is, in Ghana.

1.4 Methodology

This is a qualitative study that employs the phenomenographic approach to research, to find out how LIS professionals perceive DLs and its impact on LIS education in Ghana.

Phenomenography is a qualitative research methodology, within the interpretivist paradigm, that investigates the qualitatively different ways in which people experience something or think about something (Marton, 1986). Marton (1986, p. 31) puts it in this way: “ a research method adopted for mapping the qualitatively different ways in which people experience, conceptualise, perceive, and understand various aspects of, and phenomena in, the world around them“. Phenomenography is not phenomenology. The focus of interpretive phenomenology is the essence of the phenomenon, whereas the focus of phenomenography is the essence of the experience and subsequent perceptions of the phenomenon (Hitchcock, 2006).

The phenomenographic approach was deemed most appropriate for this study because the researcher intends to investigate the perceptions and understanding of others (LIS professionals in Ghana) of the DL phenomenon, and then apply his own experience also as data for phenomenographic analysis, as allowed by this approach (Säljö, 1996; Uljens, 1996).

Phenomenography’s ontological assumptions are subjectivist: The world exists and different people construe it in different ways; and with a non-dualist viewpoint: there is only one world, the one that is ours, and the one that people experience in many different ways (Marton & Booth, 1997). The research object with this method has a character of knowledge, therefore the ontological assumptions also becomes the epistemological assumptions (Svensson, 1997). Thus the epistemological position for this method is subjectivist.

1.4.1 Population and Sampling

The population for this study is essentially all LIS professionals in Ghana and those selected for interview made the sample for this study. In the context of this study, LIS professionals are defined as persons with first and higher degrees and LIS graduates as well as other degree holders with experience working in the library and other information systems.

However, in accordance with the objectives and purpose of the study, professionals in top positions in the profession, such as lecturers of the LIS School, and senior librarians in the main university libraries and library institutions in Ghana were targeted. They were targeted

because of their experience in LIS developments in Ghana that made them more familiar with LIS affairs in Ghana. Their views can easily influence students and library users alike. The librarians of the following institutions were selected to take part in the study: University of Ghana (UG), Accra, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, University of Education, Winneba (UCEW), University of Cape Coast (UCC) and the Council for Scientific and Industrial Research (CSIR). The researcher had some initial talks with some of the professionals in Ghana. They all promised their cooperation during data collection.

The researcher talked to as many experts as possible from Ghana, to take part in the study. This was because experience had shown the researcher that some people could agree initially to grant interviews, but may not get the time for it because of busy schedules. Technical problems could also prevent an initially agreed interview from taking place. More so, since these interviews were to be conducted with the use of the Internet and mobile phones. These notwithstanding, the librarians from the universities and institutions mentioned above, were purposively sampled for interviewing.

As indicated above, the fact that the researcher wanted to examine understanding of experts meant that few respondents would be sampled for this study. In view of this, the researcher aimed at interviewing not less than 15 and not more than 20 individuals.

1.4.2 Data Collection

The interview technique was employed to collect data from the lecturers and the librarians from the universities as well as other library institutions in Ghana. The semi-structured interviews were conducted using Skype to call the phones of the respondents.

The interviews were recorded for use in the data analysis stage. The Skype call graph recording software was used for the recordings. The software program was located at the following website <http://callgraph.biz/>.

1.4.3 Methods of Data Analysis

A phenomenographic data analysis sorts the perceptions, which emerge from the data collected, into specific categories of description. For the purpose of this study ad hoc methods were also employed for the analysis of the research findings. This is one of the several approaches to qualitative data analysis suggested by (Kvale, 1996). These include descriptions and

quotations, categorization of meaning and interpretation of meaning. A combination of deductive and inductive approaches was applied as well. A step by step description of how the data was analyzed can be found at the methodology chapter (Chapter 3).

1.5 Delimitation of Scope and Key Assumptions

The study seeks to find out how LIS professionals in Ghana perceive DLs and how it impacts on LIS education in the country. It is limited to LIS professionals in Ghana. The University of Ghana is chosen as the point of reference because the Information Studies Department is the only library school in Ghana. Also the main library (Balme Library) is the biggest and the most resourced academic library in Ghana. The researcher is also familiar with the campus because he is a former student and a regular user of the library. Even though most of the things discussed in this research were referenced to the University of Ghana, due to the reasons stated above, it does not mean the study was restricted only to the University. It is a case of Ghana as a whole. Other universities and institutions are also within scope, because their librarians were also interviewed.

Data collected relates to LIS professionals and school in Ghana. Computer science schools and courses are out of scope for this research. Due to time constraints it was a relatively small-scale research study. English language references were only used for the literature review, the researcher can only read in English and the Akan languages. But there are no publications in the Akan language related to this study.

1.6 Definitions

In this section, important terms used in this study are defined to show how they are used in the context of this study. The terms include; digital libraries, LIS professional, conceptions, and experience.

Digital Libraries:

There are many definitions of digital library. This is discussed in detail in the literature review (Chapter 2). In this section, a definition used in this study is provided which is adopted from the Digital Library Federation.

Digital libraries are organizations that provide the resources, including the specialized staff, to select, structure, offer intellectual access to, interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works so that they are readily

and economically available for use by a defined community or set of communities. Digital Library Federation (DLF).

LIS professionals:

In the context of this study, LIS professionals are defined as persons with first and higher degrees and LIS graduates as well as other degree holders with rich experience working in the library and other information fields (Mammo, 2007).

Conception:

By general view, conception is defined by the Oxford Advanced Learner's Dictionary of Current English (OALDCE), as "an understanding or belief of what something is or what something should be". In this regard, conception, as used in this study refers to the understanding of what a DL is or what a group of people believe it should be. Therefore, by professionals' conception, the implication is the understanding that professionals hold as to what is or should be a DL.

Experience:

According to the (OALDCE), experience is the "knowledge and skills that you gained through doing something for a period of time; or the process of gaining this" (Wehmeier, McIntosh, Turnbull & Ashby, 2005). In another way, it refers to "the things that have happened to you that influence the way you think and behave"(Wehmeier, McIntosh, Turnbull & Ashby, 2005, pp. 18). In the context of this study, experience refers to the knowledge and skills that LIS professionals in Ghana have gained so far, related to DLs. This knowledge could be gained through hearing, reading or using a DL.

1.7 Outline of this Report

The work was organised in five chapters as follows;

Chapter one introduced the study. It covered contents like the background to the research, the statement of the problem, aims and objectives of the study, the research questions, the purpose of the study, justification for the research, methodology, delimitations of scope and key assumptions, definitions, outline of this report, and conclusion.

Chapter two was used to review various literature relevant to the research theme. It was done with the aim to build a theoretical foundation upon which the research was based. It discussed

relevant research issues which were worth researching because they were controversial and which had not been answered by previous researchers.

Chapter three explained the major methodology upon which the whole research was designed and which was used to collect the data which was used to answer the research questions, is discussed here. The various issues stipulated by the research questions are discussed in this chapter.

Chapter four presented and discussed the results obtained from the interviews by giving a step by step analysis of the data. The final chapter, five, presented the conclusion of the study and suggested areas for further research.

1.8 Conclusion

This chapter introduced this research project. It discussed the background to the research, statement of the problem and research questions, the justification for the research and the methodology that was used to investigate the problem. It also set out the delimitations of scope and key assumptions. Key concepts were defined and it outlined the rest of the research. In the next chapters, the actual process of the research will be comprehensively explained. Chapter two reports on the various relevant literature that was reviewed. This was done with the aim of building a theoretical foundation on which to base the research. The design and the methodology of the research is explained in chapter three. Chapter four presents the results of the interviews conducted. The research is concluded in chapter five.

Chapter Two: Literature Review

This section reassesses relevant works within the literature, that have close relation to the central idea of the study. The central idea of this study was to throw light on how LIS professionals in Ghana perceive the DL phenomenon. The section was followed with the questions and objectives of the study in mind, following these subheadings along which the literature was reviewed; the development of LIS education in Ghana, ICT infrastructure and information policy in Ghana. The ideas supporting this study are discussed. The application of the phenomenographic approach to other research areas in the LIS field is also presented. Other subheadings include; what are digital libraries? DL and LIS education in Ghana, DL projects in Ghana and perceptions and challenges facing DL and LIS education in Ghana.

Even though this study is about perceptions of DL and so has DL as its important topic, materials on topics such as the development of LIS education in Ghana, ICT infrastructure and information policy in Ghana were also reviewed because they provide context for this study. One cannot talk about DLs and exclude Information and Communication Technology (ICT) since IT is the platform upon which DL can be constructed (Lesk, 2005). It therefore becomes imperative to have a look at the IT infrastructure in Ghana.

Relevant literature was retrieved from the Emerald and Academic premier databases. Others were retrieved from reliable websites using google scholar searches. Searches for materials from these databases were conducted in the period from October 2008 and March 2009. The researcher used key-word searches. Words and phrases such as “digital libraries“ OR digital library AND “Ghana“ and “digital libraries“ OR digital library AND “education“ AND “Ghana“, were some of the queries used for the searches in the databases and also in google searches. The date range of materials was from 1979 to 2008. All search results were considered for the review because they were found to be relevant to the theme of this study.

2.1 The Development of LIS Education in Ghana

This section provides a historical background to the establishment of LIS education programmes in Ghana, and traces the development of the curriculum and current programme of the LIS school, which is currently located at the Department of Information Studies, University of Ghana. Let me say here that the programme refers to what is on offer in the library school, for instance, diploma programme, bachelor degree programme, masters programme and PhD programme. The curriculum refers to the set of courses taught or offered

in these programmes. For instance, the curriculum for the bachelor degree programme is provided in Appendix 1.

A number of papers have been written on library education in Ghana (Alemna, 1996). Prominent among these are papers by Alemna (1990; 1991; 1994); Boye (1991; 1996); Kisiedu (1991;1993); and Korsah (1996). Most of the ideas in this section were adopted from (Boye, 1996), because she gave a detailed study into the development of LIS education in Ghana.

The history of education for librarianship in Ghana can be traced from 1941 (Boye, 1996). The need for professional training for library work in Ghana was first pointed out in a survey report on the library needs of West Africa, by Ethel Fagan in 1941. This report led to the organization of the first training programme at Achimota, Ghana, for six student/librarians from Nigeria, Sierra Leone, Gambia and the Gold Coast in 1944 under the joint auspices of the British Council and the four colonial governments. The move made Ghana the starting point of LIS education in Africa (Boye,1996; Gupta, 1993; Mammo, 2007). This has gone through a lot of reforms and changes in terms of curricular and structure and is now located at the University of Ghana Faculty of Social Science, Department of Information Studies (Alemna, 1996).

According to Boye (1996), in the absence of a library school during the period of rapid and extensive development of libraries in the 1950s, the urgent need for qualified librarians was met by the appointment of expatriate staff mainly from Britain, and by various training schemes where Ghanaian library assistants recruited from secondary schools combined in service training with part-time tuition and preparation for the basic qualification examination for the Associate of the (British) Library Association (ABLA). This was followed by attendance at school of Librarianship in the U.K. with a view to completing the ABLA examination and at the same time gaining experience in British libraries of various kinds.

2.1.1 The Ghana Library School (1961)

Subsequent to the training programme and proposals for support to organizations like UNESCO and the Carnegie Corporation, the Ghana Library Board invited J.C. Harrison, then head of the Library School in Manchester, England to undertake a feasibility study and make recommendations to the Ghana government regarding the establishment of a library school in

Ghana. His recommendations were accepted by the government and led to the establishment of the Ghana Library School in 1961 (Boye, 1999).

Since it had been decided that the Ghana Library School would continue the British examinations, its policies were similar to those of British Library schools. Three British lecturers and one Ghanaian were recruited, and they were assisted by some of the professionally trained practicing Ghanaian librarians on a part-time basis. The school ran for four years (1961-65) with R.C. Bengé as a head, and it prepared forty-eight librarians.

By 1965, the changes in the pattern of library education in Britain and the policies of the Library Association had made it impracticable for a library school in Ghana to continue to gear its programme to the ABLA examinations. Additionally, a desire to make librarianship more relevant to Ghanaian conditions meant that there should be a break from the British examinations. The break was effected and the library school was transferred with two of its lecturers to the University of Ghana as the Department of Library Studies (DLS) under the Faculty of Social Studies, in October 1965 (Boye, 1999).

2.1.2 The Department of Library and Archival Studies

In 1974, the department became known as the Department of Library and Archival studies (DLAS). The change of name from DLS to DLAS was to reflect the inauguration of a joint UNDP/UNESCO/Ghana Government scheme in Archival Studies, established to serve anglophone African countries, as the Dakar Centre served the francophone countries (Boye, 1996). During this time (1994/95), the staff of the school comprised eight lecturers, five teaching courses in library studies and three in archival studies. Programmes run by DLAS were in three levels for both library and archival studies

1. A 12-month basic professional graduate diploma programme.
2. A 2-year sub-professional (undergraduate) diploma programme.
3. A 2-year advanced master of philosophy programme (Boye, 1999).

2.1.3 The Department of Information Studies

In 2001, the name of the department was changed to The Department of Information Studies (DIS). The change of name was to reflect major changes made in the curricula to include IT courses such as computer literacy and database management systems. Thus, there is now the inclusion of the computer element in LIS education in Ghana. The DIS is the only institution

currently providing professional education for librarians in Ghana. Currently, the staff of the school comprises of twenty-two lecturers and runs thirty courses (16 core courses and 14 electives), at the bachelor level. The DIS currently runs programmes at the following levels

1. A 2-year sub-professional (undergraduate) diploma programme
2. A 4-year undergraduate Bachelor of Arts degree programme
3. A 1-year Master of Art degree programme
4. A 2-year advanced master of philosophy programme (Boye, 1999).

2.2 ICT Infrastructure and Services in Ghana

From the literature, Information and Communication Technology (ICT) appears to be a term that includes communication devices like radio, television, cellular phones, computers and satellite systems (Martey, 2004). ICT is a tool that any sector can use to deliver its services. In LIS education, ICT can be used in preparing and presenting lectures. A distance education provider can create and use a portal to provide technical and methodological help for academic staff for developing ICT- courses in LIS and provide video conferencing facilities for the distance learner (Martey, 2004).

Admittedly, ICT is not being extensively used in libraries and LIS education in Ghana (Martey, 2004). There is, however, a lot of optimism and rhetoric about the potential of technology-enhanced LIS education and library services. It is hoped that, in the very near future, ICT will be heavily and extensively used to provide services in libraries and education not only in LIS but for the whole educational system in Ghana (Martey, 2004). In Ghana, progress towards ICT based service in libraries and LIS education has been slow for a couple of reasons. Prominent among them are the high cost of information and communication infrastructure and the lack of technical expertise (Martey, 2004).

There is evidence to suggest that Ghana as a country, recognizes the importance of ICT in development (Abissath, 2008; Martey, 2004; Nyarko, 2007; Malcolm & Godwyll, 2008). According to Nyarko, (2007), some African countries such as South Africa are way ahead of Ghana in the development of infrastructure, accessibility and use of ICT. However, in the West African sub-region, Ghana is reported to have advanced faster than most countries, especially in the area of telecommunications, where Ghana is likely to achieve a teledensity of 50 percent, well ahead of the target for the UN Millennium development Goals. This point is also stressed by Martey (2004), in his paper, "ICT in Distance Education in Ghana".

According to Martey, ICT infrastructure developments in Ghana may not be progressing as rapidly as Ghana would have liked, but some consolation can be taken from the fact that ICT infrastructure in Ghana is progressing, as compared to other low-income countries, globally and above the 1.1 per cent average for the sub-Saharan Africa, according to the Data Development Group of the World Bank (Martey, 2004). The government of Ghana, both past and present, and other agencies have over the years made several strides to develop the ICT infrastructure so as to bridge the digital divide between Ghana and the developed world (Martey, 2004).

In 2003, the government of Ghana completed the formulation of a comprehensive ICT Policy for the nation. It was known as Ghana Information and Communication Technology for Accelerated Development (ICT4AD) (Abissath, 2008; Martey, 2004; Nyarko, 2007). Within the frame work of ICT4AD, the Ghana government has embarked upon several projects including E-Ghana Project to transform Ghana into an information enabled society for knowledge based economic development. But the focus of this piece is on the Community Information Centres (CICs) project which is not only human-centered but is underprivileged rural dweller-centered as well (Abissath, 2008).

As stated in Martey (2004), GILLDDNET, a DANIDA-sponsored Inter-library Lending and Document Delibery Network involving six Ghanaian academic institutions, blazed the trail for these developments. The GILLDDNET project was ably steered by a Danish coordinating team and a Ghana steering committee provided computers and accessories to all the participating libraries. Its greatest achievement was its elaborate training programme for Ghanaian librarians and technical staff. This was done in close collaboraration with the International Network for the Availability of Scientific Publications (INASP) in Britain. A later development was the formulation of a Wide Area Network (WAN) called the Research and Educational Network (REN), established in 2000 with the help of the World Bank Information for Development, INFODEV project (Martey, 2004).

Committee of Universty Librarians and their Deputies (CULD) felt that with the demise of GILLDDNET a more formal cooperation was needed to build on the gains so far made in ICT development on the academic front. The Committee of Vice-Chancellors and Principals (CVCP) in February 2004 accepted, in priciple, CULD's suggestion for the formation of a consotium of academic librarians. The CVCP asked for a proposal which was sent for study and necessary action to be taken (Martey, 2004).

In March 2004, CULD with the support of Electronic Information for Libraries (EIL) an NGO successfully organized a two-day workshop on consortium building for Ghanaian academic librarians. CULD had argued that since Ghanaian academic libraries (libraries involved in the GILLDDNET project) would, as from January 2005, start paying for the online journals and databases that the Programme for the Enhancement of Research Information (PERI) project had from 2000 made available, it was desirable to form a consortium that could bargain from a position of strength with vendors of electronic resources and sign meaningful and beneficial licensing agreements that will benefit all categories of students, particularly LIS students who will want to take some courses through distance education to be able to access the subscribed electronic resources from remote locations (Martey, 2004).

2.2.1 National Information Policy in Ghana

In 2005, the President and Parliament of Ghana enacted the Right to Information bill. This policy applies to information held in government agencies (Right to Information Act, 2005). It was an act with the following objectives;

- to provide for the right of access to information held by a government agency subject to the exemption that are necessary and consistent with protection of the public interest and the operation of a democratic society;
- to provide for the right of access by an individual to personal information held by a government agency which relates to that individual;
- to protect from disclosure, personal information held by a government agency to the extent consistent with the preservation of personal privacy;

The Act applies to information regardless of whether it came into existence before or after the coming into force of this Act. It also applies to information held by an independent contractor engaged by an agency as a contractor and the information shall for the purposes of this Act be taken to be information held by the agency. However, it is stipulated in section 60 of the policy document that the Act does not apply to information held by the national archives, libraries and museums to which the public have access. This presupposes that, the people of Ghana have unrestricted access to the information and materials held in public libraries and other information institutions like museums and archives. (Right to Information Act 2005).

2.3 Ideas Supporting the Study

The study is guided by the formal set of ideas that are intended to explain the concept of DLs and how best to incorporate the education about DLs into Ghanaian educational systems. It is therefore worth noting that of the several ideas concerning DLs this study will include looking at what people see the concept to be, and how others have attempted to provide education for it.

According to Gonçalves, Watson and Fox (2008), digital libraries have eluded definitional consensus and lack agreement on common models. This makes comparison of DLs extremely hard, promotes ad hoc development and impedes interoperability. In their paper, “Towards a Digital Library Theory: Formal Digital Library Ontology“, Gonçalves et’ al propose a formal ontology for digital libraries that defines the fundamental concepts, relationships, and axiomatic rules that govern the DL domain, therefore providing a frame of reference for the discussion of essential concepts of DL design and construction. They used the (5s) of Streams, Structure, Space, Scenario and Societies to provide a formal model for digital libraries. The resulting ontology can be used to classify, compare, and differentiate the features of different DLs. To test its expressibility, they used the ontology to create a taxonomy of DL services and purposes about issues of minimality, extensibility, and composability (Gonçalves et al, 2008). This idea is relevant to this study because it provides a reference to the meaning of what a DL is, and it can influence the people’s perception of the phenomenon.

The study is also within the framework of a social realistic structure of activity theory. Social realistic opinion is relatively a new evaluation paradigm, positing that outcomes follow from mechanisms acting in contingently configured contexts (Spasser, 2002). Activity theory is a philosophical and cross-disciplinary framework for studying different forms of human practices in multi-level, stratified manner, developmentally in time and through space (Spasser, 2002). The idea of activity theory is used as one of the base ideas of this study because of the Ghanaian context. There is no DL in Ghana as of now, a full understanding of the phenomenon there needs practical activities and not just theoretical instructions.

According to Ashok and Beck, (2007) many attempts to bridge the digital divide between developing countries through ICT projects have had little success. With the concurrent rise in the number of ICT projects in rural or developing areas like in Ghana, and the place being devoid of digital artifacts, the use of complex theories needs to be re-examined (Ashok &

Beck, 2007). Highly sophisticated theories are suitable in urban areas and may not be workable in developing areas. However, Activity Theory lends itself well to developing environments as its primary focus is on pre-existing activities and goals rather than digital artifacts themselves. Using this theory as basis, professionals can reflect and re-examine past failure and successes of ICT applications in Ghana. This can also help them to come out with their true perception of the DL in the country.

2.4 Application of Phenomenography to other Areas of the LIS Field

The motivation to use the phenomenographic approach for this study stems from its successful application in other areas of LIS, particularly Information Literacy (IL), by some experts in the LIS field. Below is an enumeration of how some experts used the approach to achieve results in their studies;

Andretta, (2007) for example, employed phenomenography in a conceptual framework for information literacy education. The purpose of her study was to explore the adoption of a phenomenographic conceptual framework to investigate learning from the perspective of the learner, with the aim of reflecting on the features that the approach shares with information literacy education in general, and with the relational model in particular (Andretta, 2007).

Andretta's approach was an analysis of the phenomenographic research on learning undertaken by Marton, which was further elaborated by examples of collaborative work by Marton and Booth, as well as by Fazey and Marton. The relationship between understanding and learning, promoted this perspective, and was explored in her paper to illustrate its impact on retention and transfer of the learning process. In her findings, Andretta's paper reflects on the potential impact that phenomenography and the relational perspectives have on the pedagogical practices in Higher Education (Andretta, 2007).

Also the approach was employed by Stuart Boon, Bill Johnston and Sheila Webber to identify UK English academic's conception of information literacy and compared those conceptions with current information literacy standards and frameworks. Their three year AHRB-funded study involved 80 academics interviewed throughout the UK and used the phenomenographic research method to discover variation in experience leading towards identification of qualitatively different conceptions of information literacy (Boon, Johnston & Webber, 2005).

Other prominent researchers who have applied the phenomenographic approach are Christine Bruce and of course Louise Limberg who happens to be one of the pioneer users of the approach (L. Limberg, personal communication, march 20, 2009).

Limberg (1998), used the phenomenographic approach to study information seeking through an explorative investigation of the interaction between information seeking and use and learning outcome. Her data consisted of 75 interviews with 25 high school seniors, undertaken to observe students' information seeking and learning processes. She identified and described three categories of conceptions of information seeking; a) Fact-finding, b) Balancing of information in order to chose corectly, c) Scrutinizing and analysis. She again identified three categories of students' conceptions of subject matter grounded in differences as expressed in her interview. A comparison between these two sets of categories indicated that differences between students' conceptions of subject influenced how they searched for and used information (Limberg, 1998).

The phenomenographic research methodology was developed to further research into learning (Boon et al, 2005). Marton and Booth (1997, p. 113) define it as “a specialization that is particularly aimed at questions of relevance to learning and understanding in an educational setting“. It established itself as a popular methodology for qualitative research into teaching and learning, particularly in Scandinavian countries, Australia, and the United Kingdom as evinced by a review of the literature and the attendance at annual EARLI SIG 9 phenomenography and Variation Theory Conferences (Boon et al, 2005). The concept of surface and deep approaches to learning (Marton and Säljö, 1976; Marton et al, 1984), which have proven highly influential on educational discourse, were results of early phenomenographic research to learning (Boon et al., 2005). There has been no phenomenographic study on Ghanaian LIS professionals' perception on DLs.

However, phenomenography is also used in other disciplines. Summarising the research done in the LIS field using the phenomenographic method, Bruce (1999) argues that phenomenography should be used even more widely. Bruce proposes a number of areas of research that would benefit from the phenomenographic approach, for example, in studying the varying ways in which people experience information in society (Boon et al., 2005).

2.5 What are Digital Libraries?

It is believed that the first use of the term digital library in print may have been in a 1988 report to the Corporation for National Research Initiatives (CNRI). As has already been said in the introduction to this study, the concept of DLs has been defined and given different connotations by different professionals and bodies. In some publications, it is referred to as the electronic library (Collier, 2006; Harry & DePalo, 2001; Virkus, 2008), and in others, virtual libraries or online libraries (Weinberger, 2008, p.18). In some texts, it is believed that all these names mean the same thing, digital libraries, (Lesk, 2005). For example, the terms *electronic library* and *virtual library* are the older forms of the term *digital library* and they are occasionally used interchangeably, though electronic library nowadays more often refers to portals, often provided by government agencies (Fox, 1999).

A statement made by Harry and DePalo (2001), confirms this assertion; “the concept bears several semantic connotations: electronic library – records are in electronic form; library without walls – virtual library; hybrid library – contains both hard copy and electronic formats; library of the future – hopefully (eventually) all records will be in digital form; digital library – an ambitious statement implying that all records are presently in digital form.” (Harry & DePalo, 2001).

To make things even more complicated, some professionals, for instance Weinberger believes that online libraries are not libraries at all. To Weinberger, online libraries are not only more than libraries (and in some ways less), they are fundamentally different from libraries. (Weinberger, 2008, p.18).

“Online libraries will replace the basic functions of libraries, but not the rest of what libraries mean to us. That may simply be lost to us, as was the clip-clop of horses on city streets. But, even as they replace libraries, online libraries won’t be libraries 2.0, a new and improved version with zippy features, albeit lacking the smell of must and varnish. Online libraries are more unlike libraries than they are like them. They are like libraries in that they enable us to find works that we know we want and ones we did not know we want.....Libraries preserve books. Online libraries want books marked up, taken apart.....“ (p.18).

According to Harry and DePalo (2001), the phrase digital libraries refers to a collection of information bearing artifacts whose unit records have been encoded in electronic formats in

“digital“ as opposed to “analog“ mode and stored in machine readable form (Harry & DePalo,2001). Library and information science literature has variations of this definition [examples of DL definitions are given in the next section] mainly because the concept has recently been grafted on to conventional libraries which have a predominant print hard copy base (Harry & DePalo, 2001).

2.5.1 Definitions and Perceptions on Digital Libraries

Here are some of the definitions and ways through which the concept is perceived. In his book, “Understanding Digital Libraries“, Lesk (2005), gives a precise explanation of the digital library concept. Lesk believes that IT is the platform upon which DLs are built. According to Lesk, a digital library is a collection of information which is both digitized and organized and which gives us power we never had with traditional libraries. He further explains that a digital library can be searched for any phrase; can be accessed all over the world; and can be copied without error. He believes that digital libraries are going to change the social system by which information is collected and transferred. A digital library is not just a collection of disk drives; it will be part of a culture (Lesk, 2005).

Lesk’s mention of digital libraries as being part of a culture, brings to mind what Hagedorn-Saupe et al. (2008) said about digital libraries in their work on the Ministerial Network for Valorising Activities in Digitization – European Commission (MINERVA EC) project [working on quality, usable and accessible cultural websites] . According to Hagedorn-Saupe et al. (2008); “a digital library is a library in which collections are stored in digital form (as opposed to print , microform, or other media) and accessible by computers“ (Hagedorn-Saupe et al., 2008, p. 15).

Both the physical and the digital libraries offer a service to their users, in that they both make collections available through specific kinds of search and retrieval systems. The digital content is normally accessed remotely via computer networks. A digital library, from the ICT point of view, according to Hagedorn-Saupe et al., is a type of information retrieval system. Librarians may consider a digital library as another space of cultural mediation and conversation, similar to a library but in a digital environment (Hagedorn-Saupe et al., 2008, p. 15).

To Hagedorn-Saupe et al. (2008) there are three fundamental components in a digital library: a) the collection, b) access services and c) the user.

- The collection is made up of text, images, videos, sound and multimedia and includes both a permanent collection and temporary collections with a specific life span.
- The access services must enable the user to rapidly and easily find all the information he or she seeks and to extend the search to linked documents. The access system include the user interface, the research and identification system and the system for navigation and connection to the information desired.
- The user acts alone without intermediaries, and they are not limited by space and time. Because the user is an active agent, a digital document may be dynamic, and has a life cycle in relation to different users at different times (Hagedorn-Saupe et al., 2008, p. 15).

According to the Digital Library Federation (DLF, 1998) a consortium of libraries and related agencies that are pioneering the use of electronic-information technologies to extend collections and services, "Digital libraries are organizations that provide the resources, including the specialized staff, to select, structure, offer intellectual access to, interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities".

The Network of Excellence on Digital Libraries (DELOS, 2007) defines a digital library as: "An organization, which might be virtual, that comprehensively collects, manages and preserves for the long term rich digital content, and offers to its user communities specialized functionality on that content, of measurable quality and according to codified policies" (DELOS, 2007).

Digital Library is defined by Greenstein and Thorin (2002), as a library in which collections are stored in digital formats (as opposed to print, microform, or other media) and accessible by computers. The digital contents may be stored locally, or accessed remotely via computer networks. a digital library is a type of information retrieval system (Greenstein & Thorin, 2002).

According to International Federation of Library Associations Institutions (IFLANET, 2000), The World Digital Library (WDL) will make available on the internet, free of charge and in multilingual format, significant primary materials from cultures around the world, including manuscripts, maps, rare books, musical scores, recordings, films, prints, photographs,

architectural drawings, and other significant cultural materials. The objectives of the WDL are to promote international and inter-cultural understanding and awareness, provide resources to educators, expand non-English and non-Western content on the internet, and to contribute to scholarly research (IFLANET, 2000).

From the definitions and explanations above, it becomes clear that the concept of DLs is quite complicated (and sometimes confusing). Professionals look at it from their different professional standing. However, there are certain common elements that run through the definitions. For instance, almost all the definitions agree that it is an organization, it collects digital materials, stores and makes these materials available to target users, etc. It therefore behoves professionals to strategize and intensify the education on DLs. Other authorities are working seriously on the education about DLs.

According to Liu (2004), the education on digital libraries is adequate; In Liu's study, mention was made of Spink and Cool. In 1999, Spink and Cool (1999) examined how schools were teaching the subject of digital libraries. They examined 20 educational institutions (12 from the USA, 1 in Canada and seven others worldwide) that offered courses on the subject of digital libraries. From their investigations, they concluded that students taking courses on digital libraries often had vague notions of the nature of DL and that a sound conceptual framework for DL education had yet to be developed.

It is indicated in Liu (2004), that the internet survey revealed that 42 educational institutions offered courses on digital libraries. (It was immediately stressed here that it is possible more institutions offered DL courses but did not post any information about the courses on the web.) [And this is where this researcher finds quite strange to note that a digital library course will have an excuse for not posting information on the web]. Most of the educational institutions were located in North America and some countries in Europe and East Asia. There wasn't any educational institution from Africa that offered DL courses in Liu's study. It appeared that since 1999, the amount of courses on the subject of digital libraries had more than doubled, from 20 in 1999 to 42 in 2003. Liu found out that while most programs aim to teach students the basics of DLs- what a digital library environment means in current librarianship, how to construct a DL, the different placement and emphases of the courses reflects a division in conception of "digital libraries".

It was found in Liu's study that most digital library courses were offered as part of a graduate level program in library and information science, although some were part of doctoral

programs and/or computer programs (Liu 2004). To Liu, the emphases in the educational classes dealing with digital libraries reflect the wide spectrum of skills and knowledge required in the digital library with distinct academic focuses. Schools with Library of Information Science departments which offer digital libraries as a distinct course seemed to address many of the same issues and tried to give students much of the same information. The emphases tend to be a balance of theory and technology. Focuses included organization of digital libraries, resource descriptions, intellectual property, preservation, technology, collaboration, management and providing access to digital library information. These course descriptions also seemed to herald digital libraries as an ever-more important vehicle for information professionals and consumers (Liu, 2004).

Liu gives some examples of universities and what they intend to offer students with their digital library courses. For instance Drexel University (2003) wanted students to “develop an understanding of current technologies associated with the development and implementation of digital libraries.” The “Digital Library Foundations” course offered by the Catholic University of America’s (2003) School of Library and Information Science is designed to prepare graduate students in library and information science for the creation and maintenance of digital libraries“. DL courses in computer science departments, such as that offered through Cornell University’s (2003) Computer Science department, tended to concentrate on metadata, databases and information retrieval. These are just to mention a few.

Another prolific writer and an authority in DL education, sheds light on the need for a curriculum for digital librarians in Europe and also finds out about User perceptions of digital libraries. According to Tammaro (2007), education for digital libraries in Europe at the time of writing, seemed almost entirely based on skills learned during apprenticeship and short continuing education courses, but a survey of curriculum offerings had not been carried out. Tammaro also laid emphases on the survey conducted by Spink and Cool in 1999 as if to consciously buttress the point made by Liu, that there had been no sound conceptual background for DL education.

It was indicated that the inadequate conceptual background was one of the reasons for the narrow focus on technical aspects of building digital library systems. It was again stated in Tammaro, (2007) that the survey results of Liu (2004), demonstrated a balance of theory and technology in teaching approaches, and the major differences in courses arose from whether the school took a “hands-on or hands-off“ approach to digital library education (Tammaro, 2007). The purpose of Tammaro’s paper was to analyse the trends of digital library education

in Europe. It addressed the question of the roles for digital librarians and how they should be educated. She based her analysis on the results of the “ European Curriculum Reflection on Library and Information Science Education“ project and the proceedings of the Workshops on Digital Library Education, held in Italy in 2005 and Croatia in 2006. In her findings, she described three approaches to education for digital libraries: the emergence of the concept of “memory institutions“; the library-based approach to knowledge management; and the isolation of IT from library and information science (LIS) schools.

We live in a dynamic world. Things keep changing and the field of library and information science is no exception, especially with the emerging and fast developing concept of ICT. In the view of Fourie (2004), Librarians should try to make a difference by claiming the new role. According to Fourie (2004), in a dynamic, information and technology-driven society, librarians can create new roles by assessing changes in their environment. This, Fourie indicated, is a potential effect and ways to reposition themselves. She stresses that scenario building, literature reviews, situation analysis, speculation and forecasting may be used (Fourie, 2004). The purpose of Fourie’s paper was to elicit ideas on using creativity and “our sixth sense“ as an added dimension in preparing librarians to assess new roles in time.

Fourie’s (2004), point was that librarians function in a series of environments each of which comes with its own challenges. These include their immediate personal and home environments, their work place and their citizenship in a country which bring political, social, economical, ideological and educational influences. Librarians are also part of a global world that is increasingly being shaped by electronic networks and information technology (IT). They are also influenced by professional organizations, educators, senior practitioners and role players from other industries (e.g. IT, publishing, software and the database industries). Librarians have to secure a future in cyberspace, among cybrarians, Web masters, knowledge managers and officers. At the same time librarians are expected to deal with the needs the digital divide, wireless access, internet connections and a lack of basic electricity supply. Librarians must secure their future role and position (Fourie, 2004).

All these points boil down to the fact that librarians, irrespective of the challenges they face must keep abreast with time. Now it is the time of DLs and Ghana is not excluded from all these challenges Fourie has enumerated. Ghanaian librarians are no exception. They also need to secure their roles and position for the future. It is therefore important to find out how they conceive the concept of DL and how they are striving amidst challenges to secure their future.

2.6 Digital Libraries and LIS Education in Ghana

According to Virkus (2008), in order to be successful in our modern society, LIS educators should take advantage of new ICT and consider the learning preferences of “digital natives as well as digital immigrants“. Virkus used her study to review the application of Web 2.0 and the role it plays in new models of teaching and learning. She particularly examined how the introduction of new technologies has influenced teaching and learning in the library and information science education in Tallinn University, Estonia. Virkus (2008), found out that Web 2.0 is influencing the way in which people learn, access information and communication with one another. She further observed that experiences with open and distance learning and e-learning have transformed teaching and learning, provided new alternative delivery modes, and helped to reach new target groups in Tallinn University. These become apparent as a result of the long history in the use of ICT by the Institute of Information Studies of Tallinn University in its teaching and learning (Virkus, 2008).

The term digital library seldom appears in the literature on LIS education in Ghana. A search for materials on DLs in Ghana always bring results of materials containing information on ICT in Ghana. Perhaps the concept of DL is yet to be implemented in the country. Very few mentions have been made in papers like (Martey, 2004). Martey describes the ICT scene in Ghana from 1996 to 2004. He layed particular emphasis on the benefits that distance learners in Ghana would derive from an ICT-enhanced distance education. In his paper, Martey also draws attention to the effort made by various governments of Ghana and some agencies to solve the major problems facing ICT- driven distance education in Ghana. He again drew the attention of distance education providers on the minor but disruptive operational hindrances to the use of ICT. In the end, he made some suggestions as to how academic libraries in Ghana can assist distance learners now.

Martey stated among his findings that the application of ICT in the developing effort was nowhere near what the country expects, bearing in mind that Ghana had full Internet connectivity in 1995, and it was the first country in the sub-region to do so. To him, progress in ICT has been very slow. He also found no evidence that the universities providing distance education tried to intergrate library support into their programmes. He however gave an example that the Africa Virtual University (AVU) project had the campus librarian as one of the coordinators and it was difficult to assess the role of the librarian in this since, at all the

sites, there was no evidence that any meaningful contribution was being made towards the project by the librarian.

The term DL has mostly been found in association with ICT projects in Ghana. Most of these have already been mentioned in above. One such programme named Programme for the Enhancement of Research Information (PERI) took place at the main library of the University of Ghana from 1997-2002. It involved four other university libraries and an institutional library. It was a massive digital library related activity that enabled the involving libraries to share information and documents using the internet. Report on this project was presented at the 68th IFLA Council and General Conference, from August 18-24, 2002 in Glasgow. Ruth Kondrup, Reference Librarian and Library Project Manager at the State University Library, Denmark, presented the report. She was also the coordinator for the PERI project in Ghana (Kondrup, 2002).

2.6.1 Digital Library Projects in Ghana

2.6.1.1 PERI-programme

The basic ideas of the project were to establish internet connections to libraries in developing countries, to give access to information and to organise the training of staff. A group of forward looking people from the United Kingdom (UK), Norway, Sweden, Germany and Denmark formulated the idea at the IFLA Conference in 1993. The group saw the internet as a possibility to give access to information in developing countries. Ghana was selected for trial. The basic elements for the project were; electronic network links, favourable agreements with documentation centres and staff training, were set up (Kondrup, 2002).

According to Kondrup's report on the project, six Ghanaian librarians were trained at university libraries in Denmark, and they visited library co-operatives and information centres in the UK. Several workshops on Internet searching were arranged in Ghana for the library staff and for users. Two computer specialists from Ghana attended a network course in Denmark. Technical training for library staff was organized by the system analyst at the Balme Library, the main library of the university of Ghana (Kondrup, 2002).

A strong satellite Internet connection from the University of Ghana to an internet provider in Denmark, was established. A library network was then installed and the participating libraries could have access to the internet through this connection. Ghanaian Libraries involved in the project were; the Balme Library, University of Ghana, University of Cape Coast Library,

University College of Education, Winneba, Kwame Nkrumah University of Science and Technology, Kumasi, University for Development Studies, Tamale, and the Institute for Scientific and Technological Information (INSTI) CSIR, Accra (Kondrup, 2002).

Favourable agreements with access to some full-text databases were negotiated by the International Network for the Availability of Scientific Publications (INASP) in London. This programme for access to information was named, Programme for the Enhancement of Research Information (PERI). <http://www.inasp.org.uk/peri>

The PERI programme gave access to more than 5000 full-text online journals in science, technology, medicine, the social sciences and the humanities. It gave the librarians as well as the academics at the universities the possibility to make searches and print out the articles. (Kondrup, 2002).

The project was a big step towards DLs development in Ghana. More importantly, since Ghana already had problems with ICT and computer technologies (Martey, 2004; Alemna 1999).

2.6.1.2 Ghana School Library Initiative (GSLI)

In the summer of 2008, two students from Princeton University travelled to Ghana under the aegis of Princeton's Pace Center for Civic Engagement to study slum conditions around Accra and to develop a concrete proposal for action. The assessment trip was successful – the group developed a solid concept to improve education in and around Accra. This resulted in many contacts with schools and Universities. The idea of Ghana School Library Initiative (GSLI) was then born. The GSLI is one of the three projects coordinated by the Engineers Without Border (EWB)- Princeton University chapter. The EWB provides educational opportunities in international development through EWB- USA approved engineering projects, while simultaneously embodying the University's core ideas of academic pragmatism, engaged internationalism and educational service. Organized in 2004, EWB- Princeton University Chapter is a dynamic group of undergraduate and graduate students dedicated to applying their knowledge from the classroom and laboratory to address local and international challenges in a sustainable manner. (Yang, 2009).

The EWB identified that as a nation, Ghana has a brighter future because of its political stability. However, Ghana's future promise could be dimmed if its educational system is not strengthened. As at the time of this project, only 72% of school-age children were enrolled in

schools and only 60% of primary school teachers had proper training, leaving millions of children without access to adequate education. EWB-Princeton identified two key components to educational reform in Ghana: English-literacy skills and computer-literacy skills, so they developed an effective model to improve these skills through a self-contained digital library for Ghanaian primary schools. They planned to build and operate their libraries in partnership with schools in Ghana. Their libraries had strong collection of English-language reading materials, including fiction, non-fiction, and textbooks, appropriate for school-age children hands-on experience with technology (Yang, 2009).

The team also partnered with the Osu Children's Library Fund (OCLF), a Canadian non-profit organization that has a history of building libraries in Ghana. The OCLF runs a library training program in Accra that they made available to EWB-Princeton at no charge. Thus, the team will be able to ensure that each library constructed has a knowledgeable and competent librarian.

The project was to research library designs over the 2008-2009 school year and their plan was to build the first unit in summer of 2009. EWB-Princeton has established a strong evaluation framework to continually verify that the project fulfills its goals. They estimate that the project will cost a total of \$36,300 this year, but will come in under \$30,000 in future years. This is a young project which when discharged well will project Ghana into the limelight of digital libraries (Yang, 2009).

Studies have shown that general computer usage for information access was high in some private institutions because of their state-of-the-art IT infrastructure (Dadzie, 2005). Dadzie conducted her study of access and usage of electronic resources at the Ashesi University College in Accra, Ghana. The purpose of her study was to investigate the use of electronic resources by the students and faculty of the University, in order to determine the level of use, the type of information accessed and the effectiveness of the library's communication tool for information research. She used a questionnaire-based survey. All students, faculty and administrative staff were given questionnaires with the aim of reducing generalization of results. Responses were analyzed using Excel.

According to the findings of Dadzie (2005) general computer usage for information access and usage of some internet resources were very high in the University, whilst the use of scholarly databases was quite low. This is not the case in the library school in Ghana, it is rather the opposite because it suffers from inadequate IT infrastructure (Alemna, 1999). At the

University of Ghana library school, students are aware of the scholarly databases because they are taught about them (Boye, 1999). The low patronage of the scholarly databases in the Ashesi University was attributed to inadequate information about the existence of these library resources (Dadzie, 2005). Dadzie therefore recommended among others, the introduction of information competency across the curriculum and /or the introduction of a one-unit course to be taught at all levels and the provision of more computers on campus.

2.7 Perceptions and Challenges Facing DL and LIS Education

From the literature, perceptions of DLs can only be inferential. There are no definitive works on perceptions of DL. Authors display their insight into the concept through the presentation of their work, and they do this according to the way they see the concept from their various professional standings. This section will discuss some of the challenges that has hindered the smooth progress of DL development and the LIS profession in Ghana.

Challenges to the LIS profession and its education are enormous. Personal conversations with various professionals reveal problems that include among other things, inadequate funds, inadequate facilities, inadequate staff and lack of government support for the profession in Ghana. For instance, a chat with a senior lecturer at the department of information studies, university of Ghana, brought to the awareness of the researcher that in addition to the problems enumerated above, the LIS profession is also not popular in Ghana. For a long time, a lot of people feel shy to be seen working in the libraries. Most students go to the library school when there are no other options left for them. (S. B. N. Tackie personal conversation, January 17, 2009).

This revelation became clear when the name of the department was changed from the Library and Archival Studies department to the Information Studies department in 2001. Before the change of name, very few students took courses from the department as part of their bachelor studies. However, when the announcement was made of the inclusion of IT courses and the subsequent change of name, a lot of students rushed to the department during registration for the 2001 academic year. This shows how unpopular the name 'library' is in Ghana (S. B. N. Tackie personal conversation, 17th January, 2009).

Alemna, (1999) discusses what will be needed for the education and training of the future librarian in Ghana, and in his paper he also discusses some of the obstacles to LIS education in Ghana. Some of the things Alemna pointed out that would be needed for future education

and training for librarians are; the need for information technology infrastructure, the need for publishing and book trade in Ghana, improved journalism, the need for non-literate information provision to users and adult education among others (Alemna, 1999).

According to Alemna (1999), three major obstacles standing in the way of a smooth running of the LIS education in Ghana; are funding facilities and staff.

- Funding: The government of Ghana is the main funds provider for the library school. However, funding from government is very negligible. Other international organizations have been helping in the form of money or other equipments. Most of the programmes in the school and those recommended require huge sums of money, especially when it comes to supporting IT. In view of this, there is the need for funding agencies to provide assistance to the library school.
- Facilities: Due to poor funding, facilities in the library school are inadequate. At the time of writing, there were only three functioning computers for the average yearly student intake of eighty. Most broken down equipment is not fixed on time. Students are therefore taken through theoretical work with little training. This is definitely not the best of methodologies. The school and libraries need more equipment.
- Staff: As a result of continuing education and retirement, the staff situation in the LIS setting are badly affected. Also when people get a lot of training, especially in the IT aspects, they do not come back to the library. They seek jobs in other IT set ups where they get better salaries.

The challenges are many. However, this is what has been discussed by Alemna in terms of future LIS education in Ghana. More challenges will be explored from the findings of this study. In the view of Alemna, “the proper education and training of the future librarian in Ghana depends upon the active cooperation of the Library School, the Ghana Library Association and the practicing librarians“. Ideally, the control of professional education and the country should lie in the hands of the Ghana Library Association. Unfortunately, this is not so. The Academic Board of the University is the supreme authority as the Board has to approve any changes in the curriculum (Alemna, 1999).

2.8 Conclusion

The literature review chapter was used to build the theoretical foundation to support this research. Relevant literature has been reassessed. The procedure used to retrieve the materials as well as the period during which these materials were retrieved have been discussed. Materials dating from 1979 to 2009 were all considered for the review because they were found to be relevant to the study. The review was conducted with the research questions and objectives of the study in mind. The methods used by various authors and their findings were also looked at. The theories supporting this study were also discussed. Discussion of the literature consonant with pertinent LIS issues in Ghana, such as the development of LIS education in Ghana, ICT infrastructure in Ghana, some definitions of digital libraries, national information policy, ICT and library projects such as the PERI project and the Ghana School Library Initiative project as well some of the challenges facing LIS education .

The methodology chapter will present to readers the procedures used in this research. The reader will be shown how the method was applied to get the research findings.

Chapter Three: Methodology

The central purpose of this study is to investigate; 1) how library and information professionals perceive DLs, 2) how has knowledge of DL impacted on LIS education in Ghana, 3) what are some of the challenges that affect LIS education in Ghana.

This chapter presents the research design and the methodology used to achieve the objectives of the study. In effect, readers will be guided through the research as they are given the full explanation of the chosen research paradigm, the method and how it was applied, the population and sample, the data collection instruments and how they were used. Finally, this chapter will explain the kind of data collected and how they were analyzed.

3.1 Research Approach

This study is conducted in the field of social science. In the methodological literature, two basic research strategies have been distinguished in social science research; quantitative and qualitative research. These strategies can be distinguished at two levels. On one hand, and simplistically, quantitative researchers employ measurement. By contrast, qualitative approaches deal with how people understand their experiences (i.e. qualities). Table 1 shows the various distinguishing features between qualitative and quantitative approaches.

Table: 1 Distinctions between qualitative and quantitative research approaches

Quantitative approaches	Qualitative approaches
'Simple' numeric data	'Complex' rich data
Measurement	Meaning
Explanation	Understanding
Prediction	Interpretation
Generalisable account	Contextual account
Representative population sample	Purposive/ representative perspective sample
Hypothesis-testing	Exploratory
Claims objectivity	Accepts subjectivity
Closed system (experimental control)	Open system (ecological validity)

The Table 1 showing the differences between quantitative and qualitative approaches to research is adopted from http://www.psy.dmu.ac.uk/michael/qual_aims.htm

On the other hand, and at a deeper level, the differences between these approaches extend beyond just quantification. For many writers, quantitative and qualitative research differ with respect to their epistemological foundations, which concern the question of what is regarded as acceptable knowledge in a discipline, and, in particular, whether the same principles and procedures that are used in the natural science can/should be applied to the social world (Bryman, 2004, p. 11).

According to Cohen, Manion and Morrison (2001 as cited in Coleman, Lumby & Middlewood 1999) positivism and interpretivism are two research paradigms that are essentially “concerned with understanding phenomena through different lenses“. In the view of the positivist, the research world is external and objective, where the observer is independent of what is observed; the focus is on facts; research is directed to identify causality; the researcher formulates concepts for measurement; the samples used for the research are usually large; this type of research attempts to discover general laws explaining the nature of the reality (Coleman, Lumby & Middlewood, 1999).

In interpretivism, the world is regarded as being socially constructed and subjective with the observer being a part of the world observed; the focus is on eliciting understanding and meaning; the samples used for the research are small and explored in depth and during certain time-periods; the researcher is the primary instrument of data collection and analysis; and the research findings are descriptive, not arrived at by means of statistical procedures (Coleman et al., 1999).

Thus, quantitative research can be explained as a research strategy of the practices and norms of the natural scientific model and, in particular, of positivism. Qualitative research on the other hand, can be explained as a research strategy that usually emphasises words rather than quantification in the collection and analysis of data and, that has declined the practices and norms of the natural scientific model in favour of the ways in which individuals interpret their social world (Bryman, 2004).

To answer the research questions in order to achieve the objectives of this study, the qualitative research strategy has been chosen because the central aim of this study is to gain a comprehensive understanding of how library and information professionals in Ghana perceive DL phenomenon and how has knowledge of DL impacted on LIS education in Ghana. Since this does not involve any quantification and measurement, the qualitative strategy seems appropriate.

3.2 Research Strategy

Qualitative research employs a variety of strategies to achieve results in a research. Among these strategies are phenomenology and phenomenography. According to Thewlis (1973), the term phenomenology in science is used to describe a body of knowledge which relates empirical observation of phenomena to each other, in a way which is consistent with fundamental theory, but is not directly derived theory. Phenomenologists conduct research in ways that tend to oppose the acceptance of unobservable matters and grand systems erected in speculative thinking; tend to oppose naturalism (also called objectivism and positivism); tend to justify cognition; tend to believe that not only objects in the natural and cultural worlds, but also ideal objects, such as numbers, and even conscious life itself can be made evident and thus known. Center for Advanced Research in Phenomenology (CARP, 2005).

Phenomenography on the other hand is a research specialization with its roots in a set of studies of learning among university students carried out at the University of Gotheburg, Sweden, in the early 1970s (Marton, 1994). Phenomenography was pioneered by Ference Marton, Roger Säljö, Lars-Owe Dahlgren, and Lennart Svensson in the seventies (Johnson and Webber, 2007, p. 209). Phenomenography is “ a research method adapted for mapping qualitatively different ways in which people experience, conceptualise, perceive and understand various aspects of and phenomena in, the world around them“ (Marton, 1986, p. 31). According to Marton (1994), it is a “qualitative research methodology, within the interpretivist paradigm, that investigates the qualitatively different ways in which people experience something or think about something“. Phenomenography sorts these experiences and shows the relationship between the phenomenon being experienced and those experiencing it: (L. Limberg, personal communication, March 20, 2009).

Both phenomenography and phenomenology have human experience as their object. The distinction that can be made between them is that phenomenology is a philosophical method, with the philosopher engaged in investigating their own experience.

Phenomenographers on the other hand, adopt an empirical orientation, and then investigate the experience of others (Marton & Booth, 1997). According to Trigwell (2000), the phenomenographic approach is distinguished from other qualitative research methods in the following respect; 1) phenomenography takes a second-order perspective: the focus is on the perceptions of the subjects of study, not on those of the researcher; and 2) the approach aims to identify variation in experience of phenomena. The focus of interpretive phenomenology is

the essence of the phenomenon, where-as the focus of phenomenography is the essence of the experiences and subsequent perceptions of the phenomenon (Hitchcock, 2006).

As has already been said, there are varied methods within qualitative research. However, to be in line with the purpose of this study which is to find out how library and information professionals in Ghana have experienced the DL phenomenon, and their subsequent perceptions of this phenomenon, it becomes imperative for the researcher to choose a suitable method. It seems that, the phenomenographic method used in the qualitative research will suit most for the purpose of this study.

Even though quite new in the research terrain, Marton (1994), the phenomenographic approach has been applied successfully in a number of studies (L. Limberg, personal communication, March 20, 2009).

3.3 Sampling Strategy

A research population refers to the entire set of individuals about which inference will be made. Sampling is the process of selecting a few from the many in order to carry out empirical research. It is used when it is not possible or practical to include the entire research population in the study, which is usually the case (Pickard, 2007). From the literature two basic types of sampling can be distinguished; probability and non-probability sampling. Probability sampling is usually used in quantitative research because it randomly draws representative from wider population and, thus, allows the researcher to make generalizations from the findings of the study. Probability sampling has less risk of bias than a non-probability sample (Cohen et al, 2001).

Non-probability sampling is considered to be the most appropriate sampling strategy for qualitative research, which is usually done on a smaller scale (Merriam, 1998). The most common type of non-probability sampling is purposive sampling.

“The logic of purposeful sampling lies in selecting information-rich cases for study in depth. Information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the research“ (Patton, 2002, p. 169).

This research is qualitative and employs the phenomenographic approach. It is focused on library and information professionals in Ghana. The aim is to solicit their views on DLs through scientific investigation, in order to determine their perceptions of the phenomenon.

For the purpose of this study, non-probability, purposive sampling was chosen to generate data for the research. The research population has been assumed to be LIS professionals in Ghana. As has already been stated; LIS professionals are defined as persons with first and higher degrees and LIS graduates as well as other degree holders with rich experience working in the library and other information field. It was from this population that the sample has been drawn for this study.

The phenomenographic approach is effective with interviews on a “fewer“ sample of respondents who have expert ideas on the topic under discussion, (L. Limberg, personal communication, March 20, 2009). To be in line with the logic of purposive sampling, which was employed for the selection of the sample and size, information-rich cases were considered. In this sense, information-rich case refers to individuals within the population who have indepth knowledge, expertise and experience which they have acquired by working for at least two years in library and information science field in Ghana.

These persons include librarians of various university libraries and other higher education institutions in Ghana and lecturers in the library school in Ghana. The lecturers were sampled to give information on library science education and how they see the incorporation of DL aspects in the curricula in Ghana. Using this criteria, librarians from the following institutions were selected for interviews; University of Ghana (UG), Legon, Accra, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, University College of Education, Kumasi campus (UCEWK), Council for Scientific and Industrial Research (CSIR), Accra and the librarian at the Greater Accra Central Public Library. Reasons for sampling these people for interview can be summarized as; a) they have conducted several studies in LIS developments in Ghana, b) they use their expertise to provide services that will project the LIS profession into the future. For these reasons their views were seen to be very pertinent to this study.

3.4 Data Collection Process

The main instrument used for collecting the data was the interview technique. The interview questions were designed following the research questions and with the aim of helping to achieve the objectives of the study. The questions were tested in pilot interviews with three master’s students in Europe.

Getting to the actual respondents in Ghana was not an easy task. The researcher resided in Estonia, from where the study was conducted. All the respondents resided in Ghana. To get to the respondents, the researcher first contacted two persons whom he used to get the contact details for the rest. One of these two contact persons was a lecturer at the Information Studies Department of the University of Ghana. His role was to talk to lecturers in the department about the intentions of this study, which he had already been briefed on. He managed to get the consent of three (3) well experienced lecturers from the department, and the librarians from KNUST, UCEWK, CSIR and Accra public library. They all, with the exception of the librarian at Accra public library, agreed to grant the interview on phone and then forwarded their contact numbers and e-mail addresses to the researcher in Estonia, through e-mail. The librarian at the Accra public library, upon contacting him, requested to have his view written. The one from UCEWK library, after several calls and rescheduling of times for the interview, eventually could not get a suitable time. So she was not interviewed.

The other contact person was a reference librarian at the Balme Library, UG. He also talked to other librarians in the university and forwarded to the researcher in Estonia, a list of professionals totalling eleven.

3.5 The Interview Process

In all, 18 professionals were gathered through the process, from the population of LIS professionals in Ghana. The researcher decided to contact all the 18 people for the interviews. Two out of the 18 never responded at all to the several calls made by the researcher to their contact numbers nor replied the emails sent to them. Sixteen professionals responded to the researcher and accepted to take part of the study. Six out of the sixteen indicated that they would prefer to write their ideas instead of verbal interviews. Only one kept this promise with very little information. Ten expert views were therefore used for analysis. Most of the interviews were conducted between March 23 – April 9, 2009. The interviews were centered around the three research questions:

- What are Ghanaian LIS professionals' conceptions of DLs?
- How has knowledge about DLs impacted on LIS education in Ghana?
- What challenges face LIS education in Ghana?

To acquire as much variation in conception as possible, other questions were asked in addition to these central questions. For example, the additional questions included asking whether respondents had experienced DLs before. Experience here referred to whether

respondents had seen and/or used a digital library before, and whether they would prefer to use DLs instead of the traditional libraries. Questions also included when they first heard about the concept and whether they think at a point the DL will completely replace the traditional library. The interview questions are added as Appendix 2.

The time difference between Ghana and Estonia was 3 hours at the period of the interviews. Most of the interviewees were available after work, which was from 5pm to 8pm in Ghana time and 8 pm to 11 pm in Estonia. Others were conducted around 10 am Estonian time. Time period for an interview was from 25 - 30 minutes. All interview sections were recorded using skype call graph with the consent of respondents. Since Skype was used to call the respondents in Ghana, there was a need for a strong internet connectivity in Estonia. I therefore used the wifi at Tallinn University. I used the open hall on the 3rd floor of the new building. This place was very conducive for the interview because I could freely talk and listen to the interviews. Also I used this place as my miniature office.

At the beginning of the interview, I introduced myself as a master's student in the DILL programme at Tallinn University. I made them aware of the purpose of the interview and assured them of the confidentiality of the interview data. All the interview sessions followed the interview guide, even though they were not restricted to the same format.

The interview questions were grouped in such a way that some questions were aimed at only lecturers at the LIS school and another group, aimed at the librarians. Each interview question was evaluated with respect to both thematic and dynamic dimensions: thematically with regards to its relevance to the research theme, and dynamically with regards to the interpersonal relation in the interview. A good interview question should contribute thematically to knowledge production and dynamically to promoting a good interview interaction (Kvale, 1996).

3.6 Data Analysis Process

The data that resulted from the interview was analyzed manually. All the recorded interview sessions were transcribed. After transcribing, the researcher read through the interviews carefully. Similar ideas were identified and grouped into categories. To identify various themes, the researcher used a word processor, where he used one colour to highlight texts under a theme and a different colour to highlight text of other themes. The researcher used the categories to refer to terms around which data was grouped. The categories were then

regrouped under bigger ones and merged into themes. The results from this data analysis are reported in detail in chapter four.

As a phenomenographic study, this analysis was modelled along studies conducted in phenomenographic approach by experts like Andretta (2007); Boon et al, (2005) and Limberg (1998).

3.7 The Pilot Study

The motives for the pilot study were a) to test if the questions were understandable and b) to check if the feedback would be in line with the purpose of the study. Three students were used for the pilot interview. The first draft of questions were however peer-reviewed by two colleague student researchers who had their own topics to deal with. They were not part of the three who were used for the pilot interview.

After reviewing the questions colleagues made suggestions like the need to make explicit to respondents, what is a DL; and what a traditional library is. They also made suggestions about the arrangement of the questions, where too open-ended questions came last. There were other questions that they thought I could find answers by myself and so not necessary to ask.

The interviews with the two DILL Ghanaian students were conducted face to face. However, with the third pilot interviewee, it was done online using a Skype to Skype call and was recorded. This was because the person was also living outside Estonia. She was a master's student at the Norwegian University of Science and Technology. This was also to test the Skype call graph recording software.

3.8 Limitations of the Methodology

The phenomenographic method is quite new in the scientific research fraternity. Limited studies have been conducted using this method. The researcher therefore had fewer examples to follow. The interview was very appropriate for this research. However, it would have been less difficult if the researcher was in Ghana personally. Some important experts, whose ideas would have been very useful for this study, were missed. They would have agreed to take part in the study if the researcher was in Ghana himself. The Internet connection which was used to make the calls was not always constant.

3.9 Ethical Issues

The study was not devoid of the set of moral principles and beliefs governing social research. The principle of voluntary participation was applied, in that the people used as the sample in this research were not coerced into participating. They willingly offered to take part. Prospective participants were duly and fully informed and made aware of the procedures and risks involved in this study before they gave their consent to participate. Participants were assured of confidentiality for what they said and they were not put in any situation where they might be at risk of harm as a result of their participation. Anonymity of participants was considered during data analysis.

3.10 Conclusion

This chapter was used to discuss the major methodology upon which the whole research was designed. The approach and strategy of this study were explained. It also discussed the sampling strategy, the data collection, interview, and data analysis processes. It also explained how the pilot study was conducted. The limitations of the methodology and ethical issues were all discussed. The following chapter presents the analysis of data.

Chapter Four: Analysis of Research Findings and Discussions

In this chapter, discussion of the findings of this study is presented. It presents the analysis of the data obtained through the interviews. The interviews were conducted with LIS professionals in Ghana. Specific respondents were university librarians and lecturers at the Information Studies Department of the University of Ghana. The interviews were semi-structured and conducted following the interview guide (Appendix 2). It is worth noting that not all of the issues discussed in the interviews are presented but only those that have relevance to the research questions.

4.1 Demographics

As has already been indicated in the methodology chapter, results from the interviews with 10 LIS professionals are presented and analyzed. There were 3 females and 7 males. Out of the 10, 2 were only lecturers and 4 were only librarians. The remaining 4 were both Lecturers (L) and Librarians (L) at the same time. In Ghana, a University Librarian (UL) refers to the senior-most librarian at a university library who is in charge of managing the operations of the library. Out of the 8 librarian respondents, 3 were University Librarians. Another 3 were Academic Librarians (AL) working in a university library, but they were not in charge of the library. The remaining 2 librarians were a Public Librarian (PL) [Public Library in this context refers to libraries meant for the public and not attached to any particular institution, be it academic or not] and an Institutional Librarian (IL) respectively. [Institutional Library in this context refers to a library attached to institutions other than academic ones].

The least number of years of service among the respondents was 2 years and the highest number of years of service was over 30 years. Two of the respondents who worked as lecturers only, had served for 10 and 5 years respectively. Two respondents had served for 2 years as librarians only. Another two had also served for over 30 years as librarians. An (AL) had served for 16 years as a librarian and 8 years as a lecturer in the library school. An (IL) had also served for 5 years as a librarian and 3 years as a lecturer in the library school. The UL 1 and PL 1 had served for 9 and 8 years respectively. Below, Table 2 displays demographic information about the respondents.

Table 2: Information about respondents

Respondents' code	Category	Gender	Length of Service (Years)	Qualification
L1	Lecturer	Male	10	PhD
L2	Lecturer	Female	5	Mphil
UL1	Librarian	Female	9	MA
AL1	Librarian	Female	2	BA
AL2	Librarian	Male	2	BA
PL1	Librarian	Male	8	MA
ULL1	Librarian/lecturer	Male	Over 30	MA, Mphil
ALL3	Librarian/lecturer	Male	16 & 8	Mphil
ILL1	Librarian/lecturer	Male	5 & 3	Mphil
ULL2	Librarian/lecturer	Male	Over 30	PhD

4.2 Data Analysis

In this section the findings from the study are presented and then discussed by comparing them with the data generated from the literature review. The data generated through the interviews are presented first as findings in this analysis.

4.2.1 Findings: Ghanaian LIS Professionals' Conceptions of DLs

The section describes DL as it is conceived amongst LIS professionals from Ghana who participated in this study. The descriptions are outcomes of the data gathering and analysis strategy reported in Chapter 3. Taken together they represent the phenomenon of DL as has been uncovered in this investigation. The products of a phenomenographic analysis are outcome space categories of descriptions which detail each conception and include quotations which illuminate the conceptions (Boon et al, 2005).

The conceptions by the participants were grouped into categories of description and the various ways through which they perceived digital libraries within these categories were considered. Generally, participants held relatively similar conceptions about the present state of DLs for their personal, academic context and their roles as librarians and/or lecturers.

There were, however, slightly different ways of looking at the conceptions of DLs exhibited by the respondents in terms of the future of DLs. These aspects of variation present themselves as phenomenographic “dimensions of variation”.

The critical dimensions of differences are in the aspects of a) the particular context within which DL is perceived, for example whether the conception was confined to a particular DL, or whether conception generally broadened to encompass all DLs; b) the time period in which DL was perceived to be useful or relevant, for example whether the perception was confined to the time of use as a user (looking for information for personal use) or as a librarian (looking for information to answer a user’s query) and c) the particular media associated with DLs; for example whether the perception was confined to print or electronic materials only or both.

4.2.1.1 Categories of Conceptions of DLs

In all 7 categories of conceptions of DLs were identified. Table 3 below illustrates the various categories of conceptions as identified by the Ghanaian LIS professionals. Following the table is an explanation of the various categories of conceptions

Table 3: Categories of conceptions and their descriptions

Conceptions of Digital Libraries	Description
Resource and Content Conception	Accessing and retrieving information
ICT Conception	Tool for providing better access to information
Collaboration Conception	As a collaborative endeavour
Complementary Conception	Complementing traditional library
Challenge Conception	Needing resources, infrastructure, training
Educational Conception	As a tool for improving academic work
Preservation Conception	As a tool for preservation and extension

Category 1: Resource and Content Conception

In this category, DL was conceived as an information resource with content and functionality that enhance easy access and retrieval of information. The focus of this conception was on how respondents generally perceived DLs. The interest was to find out from respondents what materials are considered to be in a digital library collection and how DL functionality is also perceived, especially by those who have personally experienced DLs. Professionals perceive the content of a DL to include both locally generated materials as well as those produced from outside the country. At the heart of this conception are the benefits DLs give to users by providing easy access to content in a fast multi-modal way. Thus, the key purpose was to access and retrieval of information. Below are quotations from some of the views expressed by respondents as to how they perceive DL to be in terms of resource and content.

I think the digital library is a huge (accessible and retrievable) database made up books, journal articles, preprints of prints, remote and relevant databases and any other information that the clientele of a particular library may need for research and academic work [ULL1].

The resources and content becomes an institutional repository when they are generated within and for an institution or institutions.

...consist of both locally generated materials and electronic materials from outside the country. Meaning; CD ROMs, electronic books, online journals and other materials produced outside the country. Then you add these to the institutional repository, which I think, is the information created within an institution or institutions in a country. These are the items I see as DLs [UL 1].

There are different definitions for DLs But what I think is, when in a setting you don't have any book at all and when all these books have been put in electronic formats and a database is created for all the books, which is very impossible, I know. All the books in the library cannot be put into electronic formats. You'll not be allowed to put all of them in electronic formats without permission. But you can do institutional repository. [ULL 1]

It is a collection that is stored in digital format and can be retrieved in digital format. So we are looking at not only books and journals, but other resources and I think the internet forms part of it.... [ILL 1]

As can be seen from respondents' statements, the contextual dimension within this conception is the use for which the content of the resource may be retrieved. What you want to use the information for, will be influenced by which content to retrieve. The time or temporal focus is

how quickly they perceive the DL will bring the resultant materials. This conception indicates that Ghanaian professionals attach importance to the contents of DLs. What is contained in the DL will influence what will be retrieved given the appropriate functionality and tools.

There should be content for the DL. If you do not have content, then what is the ICT for? The important thing is to generate the content. Like most of us, we didn't do ICT in school, but we have the content. So now it is easy for us to apply it. If even I do not do it directly, I employ someone with an ICT background to convey that content to help me do it [PL 1]

Category 2: Information Technology Conception

In this category of conceptions respondents saw DLs as using ICT as a tool for information accessibility and retrieval. At the core of this conception lies the importance of ICT for information access and sharing. Personal networking through ICT and providing equal access to information for all users, irrespective of their background or conditions (whether physically fit or challenged), was the focus of this conception. The contextual focus of this perception was within the framework of ICT as an aid to information retrieval and it was perceived at a period of use as a librarian (this means the perception is coming from the person as information professional and not a user). The media is confined to a particular university ICT resource.

Ghanaian universities have identified the need for ICT to deliver DL service. One respondent noted:

...if you have tools or any technologies that will enable fast and easy information delivery, go for it. That is DL.... that is the 'what, the 'how' is a different matter [ULL 1]

Another respondent stated:

[The library] launched its automated online catalogue on March 26, 2009. We are almost there. There are only a few things to do; we need to put the barcodes in the books and then we are almost there with our OPAC. Equipments, software, etc are all ready we are using the Alexandra software, which is different from what others are using. It is already installed just that we need few things in place. But, I hope by the end of this year ... will also go online [UL1].

The central focus of perceiving ICT as a tool to access and retrieve information was on the speed with which the 'tool' makes this access and retrieval possible. This conception shares a similar purpose with the previous conception (Resource and Content Conception). The two go

hand-in-hand. It was perceived that putting more emphasis on ICT at the expense of content is not the best.

..... We believe that ICT is good, but it is just a vehicle. The content is more important. It is the vehicle of getting the content available to people quickly, evenly and several people simultaneously. That is what we see. We don't want them to put more emphasis on ICT and forget about the real information aspects [UL 1].

Respondents also noted, when talking about LIS education, that the library school in Ghana puts more emphasis on IT at the bachelor degree level and less on library contents. But at the diploma level they teach more about library contents and have less emphasis on IT. Employers are not happy about this and would prefer that the library school puts emphasis on content too.

I have said it within myself that is two people apply for a job in my library with a diploma and a degree qualifications; I will employ the diploma holder. This is because; the diploma holder knows more of library works than the BA information studies holder. So this is something we are also telling the library school [UL 1].

Category 3: Collaboration Conception

In this category, DL was conceived as a collaborative means of satisfying the information need of users. The focus of this conception was to illuminate the idea that DLs do not function as separate entities to achieve needed results. This means that information needs can be met by the synergy of different efforts by people, content and tools and services such as training. It is not the work of one person or library or a service. The contextual focus of this conception was not confined to a particular DL. The media focus was on electronic materials.

This collaboration can be seen as a group of libraries pooling resources together to make subscriptions for digital materials which they would not be able to get access to, individually.

In Ghana, we have a consortium called the Consortium of Academic and Research Libraries (CARL). It is this consortium which subscribe to electronic journals and electronic databases. We have not gotten into ebooks yet. So together, each of the universities has about 19000 online journals available for use. [UL1].

Through collaboration many user needs can be met, which would have been difficult for a single library to achieve. Even though these libraries are not always DLs or do not have digital collections, they are able to provide electronic journals to their users as a results of the collaboration.

....so it looks like now we are serving a lot of people. All the public universities are members and several of the private universities are also members of the consortium. I must say it's been very useful and helpful, making current information available to people [UL1].

Category 4: Complementary Conception

In this category, DL is conceived as a unit that requires the complementing qualities of other entities to make its work complete. At the core of this conception is stressed the important idea that even though DL was borne out of traditional libraries, the two have quite different features but together form a useful combination of skills, qualities and physical features that work together to satisfy users' needs. The point here was that traditional libraries need DL qualities to perform better and DLs need qualities of traditional libraries to exist, rather than one taking over the other. This means the idea that DL will soon take the place of traditional libraries was not the perception in this category.

There is no way print can ever go out of the market. This is simply because, whether we like it or not, it is easier to read paper than to read it online. Usually, when I want to read something from online, I prefer printing and read it because of the effect on the eyes. 2) It is more convenient to sit and read paper than continually looking on the screen. So whether we like it or not, print books are never going to be out of the market. We are going to have the hybrid library and it is going to stay for a long time. [ULL 2].

I don't think DL libraries can totally replace the traditional libraries. That would render some people jobless. Eg in our part of the world with our economic problems, it will take a long time. In my opinion that wouldn't be good. I think DL is a good thing, even though I do not appreciate the idea of it taken over the traditional library completely [AL1].

In the short term I do not think my concept of a digital library can replace the traditional library in Ghana. Even in the developed world the traditional libraries are still in operation [ULL 1].

There has been the debate over decades that there will be paperless society. But I think the two will complement each other very well but the DL can not replace the traditional library completely [ILL 1]

Even in the advanced countries where they have all the technologies, the two work together. I have visited several libraries in the United Kingdom and Europe and what I saw was that they have the digital and the print [UL 1]

The complementary conception of DL becomes important with the problem of the digital divide and other problems facing developing countries. There can be better results if traditional and digital libraries complement each other.

We believe that DL is very important, but with our own peculiar situation, our environmental and economic situation, we might not serve our people if we decide to go 100 percent digital. That is why we believe that it is good to go digital but it's better to use print side by side [UL 1].

To complement each other, there can be electronic databases, created to ease access in place where accessibility to available information resources is difficult.

...so the DL that I am envisaging for the distance learners is that since some of them are in Wa, Navorongo, Tamele and spread all over the country, and there are no good libraries to serve them, I thought something must be done for them. If you are in Accra or Kumasi or in any of the big cities, you can visit the libraries, but if you are away from the cities, it becomes difficult to get access. If you are doing a degree course and you don't have access to information, I said that a database of what can be put in electronic formats should be put and made available to these students. Now at worse, you can put bibliographic details and then show the person where he can obtain the documents. So you see what I mean by DL, it might not be like what others think of DL [ULL1].

The complementary conception can be seen clearly in the use of information resources. Professionals find the use of both the electronic as well as physical libraries, useful. They may need to supplement the information they get from one source with those obtained from the other.

I use the internet to look for information a lot, but I am not satisfied with its use. The information it provides is not adequate. You need to get information from other sources like the library to supplement [AL 1]

Complementary conception can help to prevent problems that may arise with the use of only one information resource. For instance, when one has problems with the use of an electronic resource, physical resources might be used as a supplement.

I would liked to use the internet to look information because it is efficient. But sometimes there are problems with the computers. So I would use the two [AL1]

Category 5: Challenge Conception

DL is conceived as a challenge. This conception points out issues identified to be various challenges that come to test the abilities of a DL, its developers or users. The focus indetifies these challenges and once they are identified there can be possible solutions to address them in order to enhance processes that will lead to the development of DLs. The challenges of DL comes in many forms, more so, as Ghana is coming from the developing world and is affected negetively by the digital divide. The development of DLs needs funds, equipment, expertise as mentioned by several respondents. Ghana faces a big challenge in terms of funds for education and ICT as well as possible DL development.

As the respondents noted:

....For instance when you go to the Ghana Library Board, that is the library responsible for public libraries, it is in a poor state because it is not well funded [UL 1]

Equipments are very expensive to aquire, when they break down cost of maintainance is also high [ULL 3].

We can only afford low bandwidth, which is very slow. High bandwidth is very expensive [UL1].

Libraries as well as the library school lack infrastructure. As one respondent explained:

There is high cost of infrastructural development. There are very few lecturer room but many students [L 1]

Another respondent also indicated how identified the challenge of inadequate equipment;

In the advance countries they just get rid of these computers when they are about 5 year of use. But this is not the case of Africa. People can use a pc for over 10 year or more and most of the time these are acquired second-hand [ULL 2]

DLs are based on electronic gadgets and function with electricity. There is inconsistent electricity supply in Ghana.

.As a result of the electricity problems I have acquired a standby generator plant to supplement power supply. But cost of maintaining the generator and fuel is very high [ULL3].

The need for adequate training and expertise was also frequently mentioned; where equipment is acquired, there is the challenge of expertise operation.

I think I need some training before I can use the DL, especially on the job training [AL 2]

It was stressed by several respondents that education on libraries and for that matter DLs is inadequate in Ghana. One respondent noted:

I think many people including the professionals themselves are not aware the information policy in Ghana and many library issues [AL 1]

Equipment are very expensive, when they break down too cost of repair is very high and expertise needed [ULL 2]

In adequate LIS educate education can also be a challenge.

For example when we were launching our OPAC, we realized that many people , especially students were not aware of the existence such a facility [AL 2].

I think DL is a very good thing.....I also think a lot of people are not aware of it so ther e should be more education and training on it [AL 1].

People do not visit the public library. There is very little interest in reading in Ghana, I think there should be more education about libraries to create and sustain people's interest [PL 1]

Category 6: Educational Conception

In this Category, DL is conceived as a tool that can be used to improve academic work and education in general. The essence of this conception is to illuminate the idea that DL can be used as a tool to make teaching and learning better. Many of the respondents connected the DL with LIS education in Ghana and found that the curriculum needs changes. Respondents indicated that DL theoretical and practical aspects should be better integrated into LIS education in Ghana.

I think DLs will help improve upon academic work. It is going to ease the load of work [L1]

We need to educate our people right from the school system for them to be aware of how the world is moving towards [ILL 1].

It is up to the practitioners to go out there and then educate policy makers and those who hold the pairs [ILL 1].

As a result of knowledge about DLs, lecturers are taking up training courses to upgrade their skills and knowledge in order to be current in their delivery. Also DLs can enhance the access and retrieval of relevant information with very little effort, time and cost. This will make course delivery and learning easier.

People have gone for training and all that so when they come back things will change. Hopefully by the beginning of the academic year most of them would have returned from training and start to teach [ULL 3].

There is an attempt to incorporate courses that include not just learning, but practical learning about DLs in the library school in Ghana. In view of this the lecturers are revising the curriculum. This is an attempt to improve LIS education in Ghana.

Lecturers at the library school met at Dodowa for a retreat to deliberate on the need for a revision of the curriculum where we plan to put in much electronic content. The revised curriculum will include course on DLs [L 2].

We hope to have practical learnings on DLs. It is difficult because of the challenges but it starts from somewhere [L 1]

As an improvement tool, DL, through the “ICT as a tool for providing better access to information“conception, different student groups can get equal access to information for their academic work.

There are two categories of students on our campuses 1) the abled body, the sighted and the on-campus 2) the physically challenged, the visually challenged and the disabled. All educational training have so far favoured the first group. But as a result of the idea of DLs through the provision of ICT, coverage is now for all students in my university [ULL2].

Data from the interview however indicated that students do not take lectures on ICT seriously.

... there was a course on information retrieval. I expanded it by making it possible for student to come to the ICT centre and have for it. We took them in groups and then we'll teach them how to look for information on the Internet. But students were not serious with it. Those who came too were not attentive [ULL 1].

Ghanaian professionals are aware of all these problems. They are doing what they can to provide their duties and responsibilities in the challenges. One respondent explained:

[We] will want to do something about the digital divide and so there have been series of workshops, seminars and conferences on digitization, automation and institutional repository inside and outside Ghana [ULL 1]

Respondents expressed numerous challenges. Those relating to this study are what have been presented. The interview data suggest that professionals want to do something about these challenges. But they can only do what they can, as the data indicates.

Category 7: Preservation and Extension Conception:

In this category, DL is conceived as a tool for preserving and expanding resources. As a digital platform DL is perceived to provide an easy, safe and lasting medium for preserving resources.

It is a novel concept which is very necessary for us especially the third world countries, which will help us expand our resources and also preserve them [ULL 2].

The resources can be seen in the areas of education and culture which are now preserved in libraries and other information resource institutions. Materials in these libraries are physical books and other physical materials. But with the DL these materials will be digitized and made into electronic forms. When these materials are digitized and the services automated, they provide an extension of these resources and were viewed as providing lasting preservation for the content. One respondent noted:

There is a vast difference between the automated library and the manual one. Before the automation of this library, users always needed to come to the library to check to see if a particular material was available or not. However, after automation one can check the availability of the material in the library before coming here in person to use it [AL 2]

So with the automation of the library, the services are now not only confined to the library building. It has been extended to the users, wherever they might be.

At the moment we have an electronic library in. So we have totally automated our services now and the library can be accessed from anywhere on campus here, from the halls, offices or from any part of the world. So things are now changing in the country. This is the first of its kind in Ghana and we are hoping that the other university libraries would also go electronic similarly or emulate [ULL 2].

DL as a tool of extending resources can also be seen in LIS education where attention is on a particular group of students. But with “ICT as a tool providing better access to information“, educational resources could be extended to all different target groups. As quoted in conception 2.

I said to myself, why don't we do something for the disadvantaged. So I said to myself, the only way we can do that will be to find out what ICT or DLs can do for these students so that we give coverage to all students and not some of them. So I set up automating the whole library [ULL 1].

In fact, many services are provided without taking into account the disadvantaged in Ghana, particularly physically challenged persons. This is seen even in our schools, including the library school. Facilities and infrastructure are provided with only the normal persons in mind. But as can be seen from the respondent's comment above, ICT made it possible to extend resources to all students.

4.3 Discussion

In this section, the findings of this study are presented by comparing them to the data from the literature review. There hasn't been any study on conceptions of DLs in the literature. There were however several studies conducted on conceptions in Information Literacy (IL) by Boon, et al, (2005), Limberg (1998), Andretta (2007) and Bruce (1999). They also used the phenomenographic approach so the style of discussion of this study could therefore be modelled to relate to some of these studies. The results were also compared to the framework of ICT and DLs as explained by Martey (2004) in his article about ICT use in Distance Education in Ghana.

The discussion begins with brief comments about the findings relating to Ghanaian professionals conceptions of DLs.

In relation to the first conception, “DL as seen as an information resource and content“, the findings are consistent with the literature cited previously. Regardless of the absence of, and limited experience in DLs and electronic information resources, professionals from Ghana see the phenomenon as a huge source (database) to obtain accessible and retrievable information in the form of electronic books, articles, online journals and other resources, to satisfy the information needs of their clientele. Even though several of them indicated that they have not used a DL before, they perceived the phenomenon to be a great source of information with useful content with functionality that enhances easy access to and retrieval of the content.

I will say that yes it is a DL because now one can access the holdings of the library through the library's OPAC from even outside Ghana [AL 2].

They make information delivery faster and easy and it can be accessed fast and in timely manner [ULL 1]

Some definitions from the literature also see DLs from the resources and content perspective just as conceived by the Ghanaian LIS professionals. For instance the definition given by Hagedorn-Saupe et al. (2008) and also Greenstein and Thorin (2002) approach. According to the handbook on cultural web user interaction, prepared by Hagedorn-Saupe et al. (2008)

a digital library is a library in which collections are stored in digital form (as opposed to print, microform, or other media) and accessible by computers. (Hagedorn-Saupe et al., 2008, p. 15).

Digital Library is defined by Greenstein and Thorin (2002) as;

..... a library in which collections are stored in digital formats (as opposed to print, microform, or other media) and accessible by computers. A digital contents may be stored locally, or accessed remotely via computer networks. a digital library is a type of information retrieval system (Greenstein and Thorin, 2002).

But there are many other definitions which look at DLs in a much broader perspective like the definition given by DLF and DELOS;

Digital libraries are organizations that provide the resources, including the specialized staff, to select, structure, offer intellectual access to, interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities (DLF).

The DELOS Digital Library Reference Model defines a digital library as:

“An organization, which might be virtual, that comprehensively collects, manages and preserves for the long term rich digital content, and offers to its user communities specialized functionality on that content, of measurable quality and according to codified policies“ (DELOS, 2007) .

The comparison indicates that Ghanaian professionals have similar perceptions as their counterparts in the developed world, but there are also significant differences. An important difference comes as a result of the digital divide. Most of the professionals from Ghana discussed DLs as they have heard or read about it, and not so much as they had used it or seen it used.

I have never used a DL before. I don't think the Internet is a digital library because I don't think that DL is the information that we provide using the Internet connectivity [PL 1]

The conception that DL can be recognized as ICT being used as a tool to provide better access to information can also be related to the data in the literature. Professionals believe that any tool that helps in information delivery must be embraced by whoever takes the helm of affairs.

ICT is not mostly used in Ghana because the country is affected by the digital divide. In the absence of DLs ICT is used to provide digital library services. By this conception it is being stressed that DL is not just about the software but requires a technology to link the resources, just as one respondent noted;

A DL is different from the software that is used to develop it. The softwares are used as the means to get the DL done, they are not DL per se [ILL 1]

From the literature, the ICT conception can be supported by Lisk (2005)'s assertion that IT is the platform upon which DLs are built (Lesk, 2005).

The conception can also be compared with the frameworks where ICT have been used to provide DL library services and training like the PERI and the GSLI projects. Through the PERI, strong satellite Internet connections were established and six Ghanaian librarians were trained abroad on how to use this platform to access full-text online journals to satisfy user needs in Ghana. The GSLI also proposes to build and operate school libraries for Ghanaian schools to help children at school age (6-17 years) to get access to information using computers. This will bring the awareness of DL to people right from school age (6-17 years). Just as the idea was supported by data from the interview with professionals.

A comparison of the view by Lesk (2005) and the views by professionals from Ghana indicates that perhaps ICT oriented view to DLs is quite strong in Ghana because people associate DLs with technology, because they do not have appropriate training. Also it may be

the lack of possibilities to experience DLs which has come about as a result of weak ICT infrastructure. This also results from challenges caused by the digital divide.

The conception of DL as complementary to the traditional library is supported by data from the literature. The change from traditional to digital library takes time and these must work hand-in-hand. The interview data suggest that digital libraries are not going to take over traditional libraries completely.

ICT and DL projects discussed in the literature such as the PERI and GSLI indicate that DL came to complement traditional libraries. This is because they involve digital as well as physical services.

Inferences that can be made from the various definitions and explanations of DL suggest that they are not only talking about purely digital artefacts. For instance the explanation given by Hagedorn-Saupe et al. (2008); the DL has three components a) the collection, b) access services and c) the user (Hagedorn-Saupe et al., 2008, p. 15).

The collection is made up of text, images, videos, sound and multimedia and includes both a permanent collection and temporary collections with a specific life span.

The access services must enable the user to rapidly and easily find all that he or she seeks and to extend the search to linked documents. The access system include the user interface, the research and identification system and the system for navigation and connection to the information desired.

The user acts alone without intermediaries, and they are not limited by space and time. Because the user is an active agent, a digital document may be dynamic, and has a life cycle in relation to different users at different times (Hagedorn-Saupe et al., 2008, p. 15).

This explanation show that the DL is not totally digital but complementary to the traditional library.

The Educational Conception is very important to this study because it provides data to answer the second research question of this research. This category of conception identifies DL as a tool for improvement in academic work as well as education in general. Responses from LIS professionals indicated that they believe that development of DLs as well as knowledge of DLs has impacted on LIS education in Ghana.

Professionals therefore believe that early and intensified education about DLs in our schools and making policy makers aware of library developments will help.

When students are trained in the use of ICT, they are able to use it as a tool to look for information in a fast and easy way to improve their academic work. However, several respondents especially from library school, indicated that students do not take ICT education seriously enough.

Liu's (2004) study indicated that very few of the 42 educational institutions who offered courses in digital libraries had hands-on courses. Professionals in Ghana also think that the curriculum for the library school in Ghana should be reviewed to include courses not just on digital libraries, but hands-on digital library learning. This raises the concern of numerous technological and other problems and the feasibility of hands-on DL teaching and learning. But professionals have indicated that it starts from somewhere and so actions are being taken towards improving LIS education to include education on DLs. This reveals that professionals in Ghana have a positive conception of the DL phenomenon and that it can also influence positively LIS education in Ghana. The interviews revealed that plans are now far advanced to change the curriculum of the library school in Ghana to favour DL education.

In Tamaro's (2007) study on curriculum for DL education, she indicated that, at the time of writing that paper, education for digital libraries in Europe seemed almost entirely based on skills learnt during apprenticeship and short continuing courses. This view was also expressed by some of the respondents in this study.

According to Tamaro (2007), there should be structures to include hands-on technological skills into DL education. However, some respondents in this study suggested reducing the technological courses in the library school to include more courses with library content. Because they believe that most of the time what was taught in the school was not relevant to what students needed coming to the field of practice and much of the library routines were learnt in the workplace. Why then should the school bother to put course names in its curriculum when the student will not have any idea of those courses in the field of practice. This also indicates that the library school can have a good structure of courses in the curriculum about DLs, but what is needed to effect teaching and learning in those courses may not be there. There may also be the problem of funds, equipments and skilled lecturers in those courses.

Boye's (1996) study carefully enumerates the various stages of the development of LIS education since 1944. A cursory look of the study indicates that education for librarians in Ghana has been devoid of ICT applications. There has been a series of revisions of the curricula for the various stages of the educational life of the field. Even though there were inclusion of IT courses in the last review, now the school plans to incorporate courses that teach DLs. This is a positive impact on LIS education, even though they have not implemented the new programme yet. This impact results from knowledge about DLs as a new phenomenon and the need to keep up to date.

The importance of the Preservation Conception of DL as a preservation tool to this study can not be over emphasised. As the name suggests, DL means that its contents are digital. This means any material stored in such a library will have to be digitized. These materials contain all kinds of valuable information, records and even scientific and cultural heritage. Turning these into in digital form and storing in the DL means ensuring continued and long lasting access. This is the essence of digital preservation. Using the DL to do this agrees with the assertion that indicates the use of the DL as a tool for preservation. All the DL definitions discussed in the literature and cited again in this discussion part support the view that DL can be conceived as a preservation tool. Greenstein and Thorin (2002) can be seen as one example illustrating this view.

... as a library in which collections are stored in digital formats (as opposed to print, microform, or other media) and accessible by computers. The digital contents may be stored locally, or accessed remotely via computer networks. a digital library is a type of information retrieval system (Greenstein and Thorin, 2002)

The Challenge Conception provides data to answer the third research question of this study. This category of conception identifies DL as a challenge that requires resources, infrastructure, training and services, in order to operate as a DL. Professionals perceive many challenges facing DLs as well as LIS education in Ghana. Most of these challenges are in the areas of ICT as a results of the digital divide. Other challenges include economic problems, such as inadequate funds, cost of equipment, expensive bandwidths, inconsistent electricity supply, just to mention a few.

Data from the interviews suggest that professionals in Ghana are aware of these challenges facing the profession and think that they can only do their part to help the situation. However, they believe that much depends on those who hold the funds [this is the basis of all the other

challenges] to support the profession, especially, the government of Ghana. Other outfits such as the University authorities and also the library association were mentioned by respondents to lend full support for the profession in Ghana.

Alemna (1999) discusses some of the challenges as the major obstacles standing in the way of a smooth running of the LIS education in Ghana. Among these he mentioned funding, facilities and staff as the main obstacles. According to Alemna, the government of Ghana is the main source of funding for the library school. However, funds from the government are very negligible. Other international organizations have been helping in the form of money or other equipment. Most of the programmes in the school and those recommended require huge sums of money, especially when it comes to supporting IT. In view of this, there is the need for funding agencies to provide assistance to the library school.

Due to poor funding, facilities in the library school are inadequate. At the time of writing, there were only three functioning computers for the average yearly student intake of eighty. Most broken down equipment is not fixed in time. Students are therefore taken through theoretical works with little training. This is definitely not the best of methodologies. The school and libraries need more equipment (Alemna (1999)).

As a result of continuing education [most of the staff sometimes leave for further education] and retirement, the staff situation in the LIS setting are affected badly. Also when people get a lot of training, especially in the IT aspects, they do not come back to the library. They seek jobs in other IT set ups where they get better salaries Alemna (1999).

The various conceptions of DLs as enumerated above can be found to be supported by the activity theory of digital library, which is the idea supporting this study. A critical yet unexamined facet of digital library design is how library content is assembled and vetted, which in turn has profound implications for digital library usefulness and usability (Spasser, 2002). As professionals conceived the DL to be content and resource, there is the need to find a framework to vet these contents and resources. The activitysocial theory, through a social realistic evaluation can provide a context for this.

Activity theory is a philosophical and cross-disciplinary framework for studying different forms of human practices in multi-level, stratified manner, developmentally in time and through space (Spasser, 2002).

Again, as indicated by Ashok and Beck, (2007) activity theory lends itself well to developing environments as its primary focus is on pre-existing activities and goals rather than digital artifacts themselves. This is with an attempt to bridge the digital divide between developed and developing countries through ICT, which is also conceived as DL by respondents.

4.4 Conclusion

This chapter presented the analysis and discussion of the research findings of this study. It first presented the analysis of the data obtained through the interview. Presentation was as follows; demographic information about the respondents, data analysis, findings, categories of conception of DLs, discussions and conclusion. The next chapter concludes the study.

Chapter Five: Conclusion

This chapter concludes the research. It sums up the salient points made by this study. It draws the reader's attention to the objectives of the study and indicates the answers to the research questions. The study attempted to identify Ghanaian LIS professionals' conceptions of DLs, identify some of the challenges that obstruct the smooth running of LIS education in Ghana and tries to suggest areas of further research that can help improve LIS education in Ghana.

The study tried to answer the following research questions;

- What are Ghanaian LIS professionals' conceptions of DLs?
- How has knowledge about DLs impacted on LIS education in Ghana?
- What challenges face LIS education in Ghana?

There is not a common definition for the DL and it lacks a common model. This makes comparison of DLs extremely difficult. Different people have different conceptions and views towards DLs and therefore have given different definitions to it. People's views toward DLs are influenced by their backgrounds and experience. Discussions about DLs are mostly concentrated in the advanced world. DLs discussions in developing countries are insignificant. The digital divide is also the cause of this. Developing countries like Ghana lag behind in technological developments. From this background, Ghanaian LIS professionals perceive DLs in various ways. Their conceptions of DLs have been grouped into 7 categories. In these ways they conceive DLs as an Information Resource and Content that enables access and retrieval; as an ICT tool for better access to information; as a collaborative endeavour; as complementary to traditional library; as a challenge needing resources, infrastructure, training and services; as an educational tool to improve academic work and education, and as a preservation tool.

Knowledge about DLs has become common. Institutions are upgrading themselves to keep up-to-date with DLs. The library school in Ghana is no different. It is revising its curriculum to include courses that will result in students learning about DLs. Lecturers are taking training courses in ICT and DLs to upgrade their skills in order to be in a better position to teach DLs related concepts. This is a positive impact on LIS education in Ghana. Libraries in the country are trying to automate aspects of their collections. The University of Ghana main library, Balme Library, has automated its collections and so now has an online open access catalogue. The University of Cape Coast library has automated most of its sections and uses

ICT to provide equal opportunities to all students groups irrespective of their physical condition and status. KNUST has now put all equipment in place and is now ready to put its institutional repository online using the Alexandra software. This is a big achievement for the institutions and the country in terms of DL development. It also implies that LIS professionals in the country are doing their best even in the midst of the problems, most of which are beyond their control. There have been many projects taking place in Ghana that have shown that the country is gradually moving to DL development. Examples of such projects include the PERI programme and the Ghana School Library Initiative project. ICT conception of digital libraries is quite prevalent in Ghana.

Professionals in Ghana see many challenges facing LIS education and DL development in the country. In their view, it is only when there are serious attempts to overcome these challenges that there can be DLs in Ghana. The challenges are seen in the areas of inadequate funds, high cost of equipment, inadequate lecturers, unstable electricity supply just to mention a few. These challenges notwithstanding, Ghanaian professionals want to do something about the digital divide and so there have been series of workshops, seminars and conferences on digitization, automation and institutional repository inside and outside Ghana.

This study attempted to look at the ways LIS professionals see the DL phenomenon and compared this to the way the concept is viewed by their counterparts in the advanced world. This was done by looking at what has already been published in the literature. A look at the literature suggests that there have not been publications about the DL in Ghana. Even though many professionals have written extensively about libraries and library education in Ghana, discussion of DLs in Ghana and by Ghanaian professionals are insignificant in the literature. Professionals are therefore urged to discuss more about the phenomenon in subsequent publications.

Both the literature and the data from the interviews suggest that there are diverse views to what the DL is about. This has resulted in many definitions and interpretations of the term DL. This division of views can easily cause confusion and impede the full development of DL. A look at other fields such as the natural sciences, reveals that standardization of terms makes understanding of concepts very easy. For instance a doctor in Estonia, speaking only the Estonian language can diagnose the same disease as a doctor in Ghana speaking only a Ghanaian language. Why then can't professionals in the library field diagnose similar problems with DLs but having different opinions about the concept. There is the need for a unified basic understanding of what a DL is.

Most of the problems the LIS field is facing in Ghana and Africa at large are as a result of the lack of interest in the field by the people. The basic challenge that underlines all other challenges is the lack of funds. Inadequate equipment, lecturers, high cost of maintaining generator plants to supplement electricity supply and high cost of greater bandwidth all require funds. The government is the main source of funds for education and the library field in Ghana. Some philanthropic Non-Governmental Organizations (NGOs), as well as other nations and international organizations also provide support. However, it looks like the government of Ghana has relegated the responsibilities for funding libraries and the LIS profession to these NGOs and international organizations, who mostly finance only projects. The government of Ghana allocates very little funds to support libraries. This is because there is woefully the lack of interest in libraries which has been there for long. Time has come for the government, students and staff and individuals to develop interest in reading and the use of the library so that adequate resources will be channelled to the development of the libraries and the subsequent development of DLs. Library associations in Ghana should also be more vibrant in their activities in order to create positive awareness of the field by the Ghanaian public. The various universities should support their libraries by allocating equal resources from their overall budgets just as to other departments in the university. This can help the libraries to undertake more projects and workshops that can help them move towards developing DLs.

In view of this, (digital) library literacy should be taken seriously both in schools and in the libraries when users come to use the services. In the school, library literacy should start early to create positive affection for libraries in the children. In various libraries, there should be programmes and services organized for their users so that they can also learn about digital libraries and its services.

It is a positive step that the library school is now reviewing its curriculum to include courses that will teach about DLs. This should be implemented rapidly for many students to benefit from it. There should be more programmes and workshops for lecturers and librarians to take advantage of them, to upgrade their skills in the field of ICT, so that they can be in a better position to teach students about DLs and assist library users respectively.

Suggestions for Further Research

The following areas can be suggested for research in the future:

- Education about DLs to create awareness of the phenomenon of DL in Ghana
- ICT as an enabling tool for access to digital information
- Needs assessment for DL development
- Accessing and retrieving digital information
- Digital preservation for lasting protection

Finally it is suggested that this phenomenographic study can be replicated with other target groups and contexts.

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Appendix 1: Curriculum for LIS education at the bachelor level in the library school in Ghana (Department of Library and Information Studies, University of Ghana)

LEVEL 100 COURSES

Course Code	Course Description	Course Credits
INFS 101	Information in Society	3
INFS 102	Introduction to Information Management	3

LEVEL 200 COURSES

The Courses available in Level 200 are compulsory for all students.

INFS 201	Introduction to Information Technology	3
INFS 202	Principles of Management	3
INFS 203	Information Management	3
INFS 204	Introduction to Computing	3

LEVEL 300 COURSES

Core

INFS 301	Information Sources	3
INFS 302	Theory and Practice of Classification	3
INFS 303	Research Methods	3
INFS 304	Indexing and Abstracting	3
INFS 305	Public Relations	3

Electives

(Students are required to select at least 2 elective each semester)

INFS 306	Collection Development	3
INFS 307	Information Services and User Studies	3

INFS 308	System Analysis and Design	3
INFS 309	Database Management	3
INFS 310	Introduction to Archives Administration	3
INFS 311	Records Management	3
INFS 312	Publishing and the Booktrade	3
INFS 313	School Libraries	3

LEVEL 400 COURSES

Core

INFS 400	Long Essay	6
INFS 401	Automation of Information Systems	3
INFS 402	Information Storage and Retrieval	3
INFS 403	Preservation of Information Resources	3
INFS 404	Marketing of Information Services	3

Electives

(Students are required to select at least 2 elective each semester)

INFS 406	Introduction to Administrative History	3
INFS 407	Automated Information Retrieval	3
INFS 408	Telecommunications and Information Network	3
INFS 409	Programming of Information Systems Application	3
INFS 410	Organizational Information Systems	3
INFS 411	Literature and Services for Children	3

Adopted from;
<http://www.ug.edu.gh/index1.php?linkid=185&sublinkid=41&subsublinkid=46&page=3§ionid=217>).

On March 16, 2009

Appendix 2: Interview Guide

Dear respondent, you have been selected purposively to assist the researcher on the topic: **Ghanaian Library and Information Science professionals' conception of the Digital Library**: Please kindly answer the following questions; you are assured of total confidentiality. This is a phenomenographic study with the following objectives:

- What are Ghanaian LIS professionals' conceptions of DLs?
- How has knowledge on DLs impacted on LIS education in Ghana?
- What challenges face LIS education in Ghana?

The study will be meaningful only when you give honest and truthful answers. Thank you for agreeing to take part in this study.

Demographic data:

1. Which department do you work for?
2. What is the level of your responsibilities?
3. What is your qualification?
4. How long have you served?

The following questions (5-11) are aimed at the librarians or workers at the Balme library of the University of Ghana.

5. Does the library provide any digital services?
6. Do you see any difference between Library Automation, Digitization and Digital Libraries?
7. Does the library receive queries for digital objects from users?
8. What are the attitudes of users towards digital library service provision and usage in the library?
9. Has the Library got any programme on user education or information literacy for its users?
10. What are some of the challenges the library faces in terms of service provision?
11. Any other comments?

The following questions (12-19) are aimed at the lecturers at the Information studies department of the University of Ghana.

12. Does the LIS school/Department have any digital libraries related courses for the students?
13. When was the curriculum last reviewed and why?

14. Is the structure of the curriculum aimed at preparing the students to be able to work in a DL environment?
15. Should the content of the IT courses in the curriculum incorporate any learning that is relevant to the concept of digital libraries?
16. What are some of the challenges the school faces in terms of digital library education?
17. What plans does the school have for the future in terms of digital library education?
18. How the attitude of students towards digital library or ICT is related education?
19. Any other comments?

The following questions (20-32) are meant for all LIS professionals (both librarians and lecturers).

Perception on Digital Libraries

20. Is the DL the same as the Internet or the WWW in terms of satisfying information needs?
21. What is your understanding of a digital library?
22. Do you need any technical training to use the digital library?
23. Would you prefer to use the digital library to look for information instead of traditional library, given the needed technical training and support? Why?
24. Can the digital library totally replace the traditional library?

Experience with Digital Libraries:

25. Which computer programs are you conversant with?
26. How often do you use the Internet or WWW for your information need?
27. Are you satisfied with the results from the Internet for your information need?
28. Which other source do you use, apart from the Internet, to look for information?
29. How often do you use the library?
30. Have you heard about Digital Libraries?
31. Have you ever used a DL for any other purpose or observed it being used?
32. Please do you have any other thing to say about digital libraries?